ESCOLA UNIVERSITÀRIA POLITÈCNICA DE VILANOVA I LA GELTRÚ

EXAMEN nº 1
ASSIGNATURA: ANGLÈS II (TELECOMUNICACIONS)
CODI DE LA PROVA: 340-03997-00-0-00
CURS: 1996-97
CONVOCATORIA: 3 de Setembre 1997
DURADA DE L'EXAMEN: 1 hora i 30 minuts
PUNTUACIÓ: 35 repostes correctes d'un total de 50 per aprovar. Les incorrectes no descompten.

I.- Choose the right alternative. Only ONE is correct.

1) I haven't brought the articles with me_____ is a nuisance.
a) that b) who c) the which d) which

2) You are not allowed to take this exam_____ you show me your identity card.
a) if b) unless c) in case d) provided

3) In case of fire extend this liquid over the fabric.
The expression that means "in case of" in this context is:
a) If b) Whether c) Provided that d) In the event of

4) This is one of the reasons_____ this engine doesn't work properly.
a) because b) why c) on which d) what

5) A heated body_____ energy in the form of electromagnetic waves.
a) gives in b) gives up c) gives off d) gives back

6) _____ a rise in temperature, the component broke down.
a) Since c) As a result
b) Because of d) Due

7) "Not to prove something" is:
a) to improve it c) to approve it
b) to misprove it d) to disprove it

8) When a person is more estimated than he/she is supposed to, we say that he/she is_____.
a) overestimated c) misestimated
b) underestimated d) unestimated

9) The verb "ENABLE" has a different meaning from:
a) allow b) forbid c) permit d) let

10) The machine keeps_____ in spite of being so old.
a) down work c) on work
b) on working d) in working

II.- Read the text carefully and choose the right option.

MODULATION.

We can only communicate information by radio waves by changing the wave in some way. This change is known as modulation. The simplest form of modulation is to turn the wave on and off. This method was used in the early days of radio for telegraphic signals. The wave stopped and started to represent the dots and dashes of the Morse code by means of a telegraph key.*[21]* 4

Speech and music produce audio frequencies which cannot be transmitted directly. But they can be used to modulate radio waves. The modulated radio wave is then transmitted. When it is received, the wave is demodulated and the original audio-frequency signal is recovered. The high frequency radio wave acts only to carry the audio-frequency signal and is called the carrier wave. The audio-frequency signal is termed the modulating signal.*[22]* 6 10

A wave has three quantities: amplitude, frequency and phase. Any of these quantities can be modulated. The two commonest methods of modulation are amplitude modulation, a.m. and frequency modulation, f.m.

In amplitude modulation, the amplitude of the carrier wave is changed according to the amplitude of the modulating signal. The frequency of the carrier is kept constant. Simple amplitude modulation ***[23] makes inefficient use*** of the transmitted power, ***[24] as*** information is transmitted only by the sidebands but the majority of the power is contained in the carrier. However, a.m. ***[25] permits*** the use of a relatively simple receiver using an envelope demodulator. Thus, it is used for services, ***[26] such as*** broadcasting and mobile radio, where this is an important advantage.*[27]* 17 19

[28] In frequency modulation (f.m.) the amplitude of the carrier wave is kept constant, but the frequency is varied in proportion to the amplitude of the modulating signal. The amplitud of the signal conveys no information. Thus, amplitude variations ***[29] due to*** fading have no effect on the output signal level. Amplitude variations ***[30] caused by*** noise also have no effect. 23

[31] Frequency modulation has several advantages over amplitude modulation. The most notable is that reception is less likely to be disturbed. This is because atmospheric disturbances and 'noise' generated in the receiver itself result in a change in the amplitude of the received signal. However, changes in only the frequency would distort the modulated information. ***[32] Because of*** its good signal/noise ratio properties, f.m. is used for radio circuits whenever a a considerable bandwidth can be provided. This is one reason why f.m. stations broadcast in the v.h.f. band (30-300 MHz) where stations can be spaced more than several hundred kilohertz apart unlike the medium frequency bands where spacings of only 9 to 10 kHz are common. 26 29

In phase modulation (p.m.), the frequency deviation (βf_m) is proportional to the frequency of the modulating signal as well as its amplitude. ***[33] Consequently,*** for signals (such as speech) that have the major proportion of their energy at the lower end of the baseband, p.m. makes inefficient use of transmission-path bandwidth in comparison with f.m. Moreover, to demodulate a p.m. signal, the receiver must compare the phase of the incoming carrier with that of ***[34] a locally-generated reference waveform*** which must be extremely stable. F.m. is therefore preferred to p.m. for the transmission of analogue signals. 39

29) "***due to***" can be substituted by:

a) as b) because c) as a result of d) since

30) "***caused by***" can be substituted by:

a) resulting from
b) produced
c) resulting in
d) leading to

31) According to lines 26-29 in the 6th paragraph, which is ***TRUE***?

a) f.m. and a.m. have the same advantages.
b) A.m. is better than f.m. because noise in the reception of a.m. changes the received signal.
c) F.m. is better than a.m. because it generates noise in the receiver.
d) F.m. is better than a.m. because there is less interference.

32) "***Because of***" means the same as:

a) As
b) Due to the fact that
c) Due to
d) Because

33) Which of these expressions IS NOT A SYNONYM of "***Consequently***"?

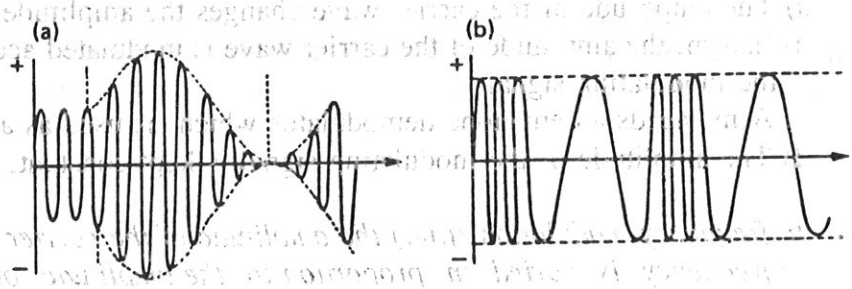
a) Therefore
b) However
c) Thus
d) For this reason

34) "***a locally-generated reference waveform***" is:

a) a waveform that generates local references.
b) a reference of a waveform which is generated in a logical way.
c) a local reference which generates waveforms.
d) a waveform of reference which is generated locally.

35) Which types of modulation are illustrated below, according to the explanation given in the text?

a) *[a] f.m / [b] a.m.*
b) *[a] a.m. / [b] f.m.*
c) *[a] a.m. / [b] p.m.*
d) *[a] p.m. / [b] f.m.*



37) *Superconductivity is especially practical if...*

a) liquid helium can be cooled to a very low temperature.
b) the compound remains liquid below 90 K.
c) materials superconduct at extremely low temperatures.
d) materials superconduct at temperatures as warm as possible.

38) *Although superconductivity offers endless future applications, the main limitations...*

a) have been technological; that is to say, finding compounds which superconduct at warm temperatures.
b) have been commercial, as in the magnetic levitation trains.
c) have been overcome, so they no longer exist.
d) have been economic, since great amounts of time and money are necessary and only American and Japanese governments have made research independently.

39) *Which is the CORRECT statement?*

a) Superconductivity will not be widely used and applied until more corporations take it more seriously.
b) We'll have to wait for at least another decade to see how superconductivity is widely used.
c) Experts believe that the most important advances in superconductivity took place a decade ago and that now we can only expect some improvements.
d) Superconductivity will provide many applications when no electrical resistance is obtained. When this happens, then the first applications will appear.

40) *One of these statements is FALSE. Which one?*

a) With superconductivity, electric current can be stored indefinitely with no energy loss.
b) Until 1987, liquid nitrogen was used as a coolant to achieve superconductivity.
c) Some new discoveries in superconductivity have been made since 1986.
d) Superconductivity can be potentially applied to so many fields that trains, electronics or computers are only some examples of its uses.

41) *Choose the CORRECT answer: Superconductivity...*

a) means that no electric current is able to flow; therefore, scientists spent many years in their search of this absence of current.
b) means that electric current can be stored indefinitely with no energy loss. Before this could be obtained, scientists had to find possible superconducting materials.
c) makes a very efficient use of electricity in spite of the difficulty scientists are still having in finding the first possible superconducting materials.
d) means that electric current is stored indefinitely with no energy loss, thus making a very efficient use of electricity, which is something that scientists achieved in a very short time and without any difficulty.

42) *"is termed" means the same as:*

a) is known as b) called c) word d) is like

VOCABULARY

I. Choose the right alternative.

11) nuisance------> problem
13) fabric--------> material, texture
22) metal wear----> "fatiga de los materiales"
26) fire extinguisher---> device to put out a fire

II. Text: MODULATION.

line 4 dots and dashes-----> . and -
line 6 speech----------> language, voice

line 17 sidebands----------> "bandas laterales o de modulación"
line 19 envelope----------> envolvente
line 23 fading----------> attenuation

III. Text: SUPERCONDUCTIVITY.

line 8 coolant----------> refrigerative liquid
line 15 breathe----------> "respirar"
line 18 room temperature----> "temperatura ambiente"
line 26 alloys----------> "aleaciones"
line 29 sizable----------> big, considerable

ESCOLA UNIVERSITÀRIA POLITÈCNICA DE VILANOVA I LA GELTRÚ

EXAMEN nº 1
ASSIGNATURA: ANGLÈS II (TELECOMUNICACIONS)
CODI DE LA PROVA: 340-03997-00-0-00
CURS: 1996-97
CONVOCATORIA: 3 de Setembre 1997
DURADA DE L'EXAMEN: 1 hora i 30 minuts
PUNTUACIÓ: 35 repostes correctes d'un total de 50 per aprovar. Les incorrectes no descompten.

I.- Choose the right alternative. Only ONE is correct.

1) I haven't brought the articles with me_____ is a nuisance.
a) that b) who c) the which d) which

2) You are not allowed to take this exam_____ you show me your identity card.
a) if b) unless c) in case d) provided

3) In case of fire extend this liquid over the fabric.
The expression that means "in case of" in this context is:
a) If b) Whether c) Provided that d) In the event of

4) This is one of the reasons_____ this engine doesn't work properly.
a) because b) why c) on which d) what

5) A heated body_____ energy in the form of electromagnetic waves.
a) gives in b) gives up c) gives off d) gives back

6) _____ a rise in temperature, the component broke down.
a) Since c) As a result
b) Because of d) Due

7) "Not to prove something" is:
a) to improve it c) to approve it
b) to misprove it d) to disprove it

8) When a person is more estimated than he/she is supposed to, we say that he/she is_____.
a) overestimated c) misestimated
b) underestimated d) unestimated

9) The verb "ENABLE" has a different meaning from:
a) allow b) forbid c) permit d) let

10) The machine keeps_____ in spite of being so old.
a) down work c) on work
b) on working d) in working

11) Alexander Graham Bell's invention in 1876, the telephone, led to a revolution in the world of communications.
"led to" is not a synonym of one of the following:
a) brought about c) prevented from
b) gave rise to d) resulted in

12) Low frequency and medium frequency bands are used_____ radio broadcasting.
a) for b) to c) for to d) so as to

13) Lubricating oil in engines_____.
Which one is not correct?
a) prevents from friction
b) prevents them from metal wear
c) avoids friction
d) avoids that metal wears

14) Most materials_____ conductors or insulators.
a) may be classified c) belong into
b) can be classified as d) can be divided as

15) Under certain conditions semiconductors_____ easily but in others they behave as insulators.
a) allow that a current flows c) allow a current to flow
b) allow to flow a current d) allow a current flowing

16) If the student_____ the fire extinguisher in time, there wouldn't have been such a destructive fire in the lab. It was completely destroyed.
a) had used b) used c) has used d) had been used

17) To install something is:
a) to keep it up c) to stand it up
b) to set it up d) to put it on

18) If the supply voltage is not normal, then the supply circuit_____.
Which one of these is incorrect?
a) should be checked c) would have checked
b) will be checked d) has to be checked

19) "Likely" means:
a) nicely b) alike c) similar d) probable

20) _____ was an important engineer.
Which of these is incorrect?
a) The man that he had read about
b) The man who he had read about
c) The man he had read about
d) The man about who he had read

II.- Read the text carefully and choose the right option.

MODULATION.

We can only communicate information by radio waves by changing the wave in some way. This change is known as modulation. The simplest form of modulation is to turn the wave on and off. This method was used in the early days of radio for telegraphic signals. The wave stopped and started to represent the dots and dashes of the Morse code by means of a telegraph key. *[21]* 4

Speech and music produce audio frequencies which cannot be transmitted directly. But they can be used to modulate radio waves. The modulated radio wave is then transmitted. When it is received, the wave is demodulated and the original audio-frequency signal is recovered. The high frequency radio wave acts only to carry the audio-frequency signal and is called the carrier wave. The audio-frequency signal is termed the modulating signal. *[22]* 6 10

A wave has three quantities: amplitude, frequency and phase. Any of these quantities can be modulated. The two commonest methods of modulation are amplitude modulation, a.m. and frequency modulation, f.m.

In amplitude modulation, the amplitude of the carrier wave is changed according to the amplitude of the modulating signal. The frequency of the carrier is kept constant. Simple amplitude modulation ***[23] makes inefficient use*** of the transmitted power, ***[24] as*** information is transmitted only by the sidebands but the majority of the power is contained in the carrier. However, a.m. ***[25] permits*** the use of a relatively simple receiver using an envelope demodulator. Thus, it is used for services, ***[26] such as*** broadcasting and mobile radio, where this is an important advantage. *[27]* 17 19

[28] In frequency modulation (f.m.) the amplitude of the carrier wave is kept constant, but the frequency is varied in proportion to the amplitude of the modulating signal. The amplitud of the signal conveys no information. Thus, amplitude variations ***[29] due to*** fading have no effect on the output signal level. Amplitude variations ***[30] caused by*** noise also have no effect. 23

[31] Frequency modulation has several advantages over amplitude modulation. The most notable is that reception is less likely to be disturbed. This is because atmospheric disturbances and 'noise' generated in the receiver itself result in a change in the amplitude of the received signal. However, changes in only the frequency would distort the modulated information. ***[32] Because of*** its good signal/noise ratio properties, f.m. is used for radio circuits whenever a a considerable bandwidth can be provided. This is one reason why f.m. stations broadcast in the v.h.f. band (30-300 MHz) where stations can be spaced more than several hundred kilohertz apart unlike the medium frequency bands where spacings of only 9 to 10 kHz are common. 26 29

In phase modulation (p.m.), the frequency deviation (βf_m) is proportional to the frequency of the modulating signal as well as its amplitude. ***[33] Consequently,*** for signals (such as speech) that have the major proportion of their energy at the lower end of the baseband, p.m. makes inefficient use of transmission-path bandwidth in comparison with f.m. Moreover, to demodulate a p.m. signal, the receiver must compare the phase of the incoming carrier with that of ***[34] a locally-generated reference waveform*** which must be extremely stable. F.m. is therefore preferred to p.m. for the transmission of analogue signals. 39

21) Which of these is ***FALSE*** according to the 1st paragraph?
a) No information can be communicated by radio waves without modulating them.
b) Stopping and starting the wave is the simplest method of modulation.
c) Modulation is the processing of a signal to make it suitable for sending over a transmission medium.
d) In the early days of radio the dots and dashes of the Morse code were used to modulate the telegraph key.

22) Which of these is ***FALSE*** according to the 2nd paragraph?
a) The carrier wave is demodulated by the receiver and the audio-frequency signal is recovered.
b) Audio frequencies can be used to modulate high frequency radio waves which can then act as carriers of the audio frequency signal.
c) The audio-frequency signal is demodulated by the carrier wave and then it is recovered.
d) The audio-frequency signal is called the modulating signal, and the high frequency radio wave is referred to as the carrier wave.

23) "***makes inefficient use***" means that simple a.m.
a) does not use the transmitted power
b) uses the transmitted power badly
c) does not use the transmitted power fully
d) uses the transmitted power suitably

24) "***as***" could be substituted by:
a) since b) because of c) due to d) owing to

25) "***permits***" is a synonym of:
a) allows b) prevents c) keeps d) avoids

26) "***such as***" is a synonym of:
a) namely b) like c) that is d) example

27) Which of these is ***TRUE*** according to the 4th paragraph?
a) The amplitude of the carrier wave changes the amplitude of the modulating signal.
b) In a.m. the amplitude of the carrier wave is modulated according to the amplitude of the modulating signal.
c) A.m. needs an envelope demodulator which is used as a receiver.
d) The amplitude of the modulating signal is kept constant.

28) "*In frequency modulation (f.m.) the amplitude of the carrier wave is kept constant, but the frequency is varied in proportion to the amplitude of the modulating signal*" (5th paragraph) means that...
a) in f.m. the frequency of the carrier wave is modulated according to the amplitude of the modulating signal.
b) in f.m. the modulating signal always changes the frequency.
c) in f.m. the amplitude of the modulating signal depends on the frequency.
d) in f.m. the frequency and the amplitude of the modulating signal are always kept constant.

29) "***due to***" can be substituted by:

a) as b) because c) as a result of d) since

30) "***caused by***" can be substituted by:

a) resulting from
b) produced
c) resulting in
d) leading to

31) According to lines 26-29 in the 6th paragraph, which is ***TRUE***?

a) f.m. and a.m. have the same advantages.
b) A.m. is better than f.m. because noise in the reception of a.m. changes the received signal.
c) F.m. is better than a.m. because it generates noise in the receiver.
d) F.m. is better than a.m. because there is less interference.

32) "***Because of***" means the same as:

a) As
b) Due to the fact that
c) Due to
d) Because

33) Which of these expressions IS NOT A SYNONYM of "***Consequently***"?

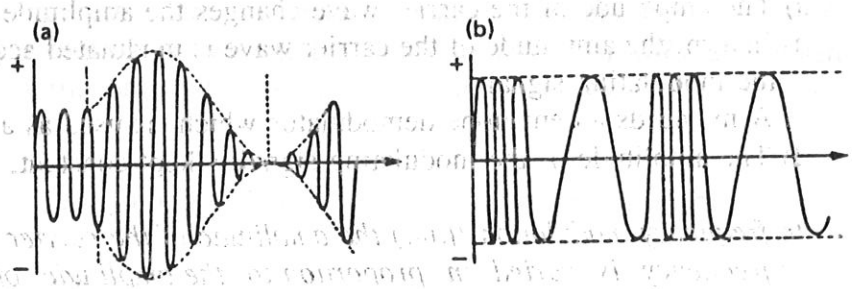
a) Therefore
b) However
c) Thus
d) For this reason

34) "***a locally-generated reference waveform***" is:

a) a waveform that generates local references.
b) a reference of a waveform which is generated in a logical way.
c) a local reference which generates waveforms.
d) a waveform of reference which is generated locally.

35) Which types of modulation are illustrated below, according to the explanation given in the text?

a) *[a] f.m / [b] a.m.*
b) *[a] a.m. / [b] f.m.*
c) *[a] a.m. / [b] p.m.*
d) *[a] p.m. / [b] f.m.*



III. Read the text carefully and then choose the ONLY possible answer.

SUPERCONDUCTIVITY

About eighty years ago it was found that when mercury was cooled to 4.2 K (4.2 degrees above absolute zero on the Kelvin scale) it exhibited almost no resistance to electric current. This phenomenon ***[42] is termed*** *superconductivity*. Superconductivity and its applications are exciting because if a substance could be cooled low enough, an electric current ***[43] would be able to flow***, and also to be stored indefinitely, with no energy loss ***[44] as long as*** the temperature remained constant. This could be the most efficient use of electricity available. However, many years passed before possible superconducting materials and coolants were found. 8

Until 1987, superconductivity had been possible only at extremely low temperatures. To be able to make superconductivity practical, it was necessary to find an element which could cool a material to such a low temperature but could remain liquid. Before 1987 liquid helium was used ***[45] since*** it is the only medium that remains a liquid below 13 K. Then, in 1987, Dr Paul Chu, from the University of Houston, announced that he had found a compound that fully superconducts at 90 K, using liquid nitrogen, a very aboundant element which makes up 78 % of the air we breathe, as a coolant. In 1988 Japanese and American scientists, 15
working independently, discovered a new compound which superconducts at 120 K and which is easy to work with. The real ***[46] breakthrough*** in superconducting technology will be when scientists find a material that superconducts at room temperature. 18

Since there is no electrical resistance, superconductivity provides many applications for governments and industry in electronics, scientific research, the transmission of electricity and other fields. One of the most promising future applications is the use of superconductivity in maglevs (magnetic levitation trains). These types of trains have been in development since the 1960's. Cheaper superconducting technology may make them commercially possible. New superconducting alloys might also be used in generating the powerful magnetic fields ***[47] needed*** in particle accelerators used in physics research, and at greatly reduced cost. These alloys might also ***[48] provide*** the basis for ***[49] higher speed processing components*** in 26
supercomputers. The potential applications for superconductivity in new and existing technology seem endless. Japanese, German and American corporations are spending considerable ***[50] amounts*** of time and money on sizable research projects. However, 29
according to many experts, widespread use of superconductivity is at least a decade away.

(Questions from number 46 to 51 refer to the content of the text in general)

36) *Superconductivity is so interesting and promising because...*

a) when scientists can find superconducting materials and coolants, we will then have an efficient use of electricity with no energy loss. However, this is not possible yet.
b) mercury can be cooled to 4.2 K, showing no resistance to electric current.
c) the most efficient use of electricity can be obtained with the appropriate superconducting materials and coolants.
d) this way, we can cool mercury or other substances to very low temperatures.

37) *Superconductivity is especially practical if...*

a) liquid helium can be cooled to a very low temperature.
b) the compound remains liquid below 90 K.
c) materials superconduct at extremely low temperatures.
d) materials superconduct at temperatures as warm as possible.

38) *Although superconductivity offers endless future applications, the main limitations...*

a) have been technological; that is to say, finding compounds which superconduct at warm temperatures.
b) have been commercial, as in the magnetic levitation trains.
c) have been overcome, so they no longer exist.
d) have been economic, since great amounts of time and money are necessary and only American and Japanese governments have made research independently.

39) *Which is the CORRECT statement?*

a) Superconductivity will not be widely used and applied until more corporations take it more seriously.
b) We'll have to wait for at least another decade to see how superconductivity is widely used.
c) Experts believe that the most important advances in superconductivity took place a decade ago and that now we can only expect some improvements.
d) Superconductivity will provide many applications when no electrical resistance is obtained. When this happens, then the first applications will appear.

40) *One of these statements is FALSE. Which one?*

a) With superconductivity, electric current can be stored indefinitely with no energy loss.
b) Until 1987, liquid nitrogen was used as a coolant to achieve superconductivity.
c) Some new discoveries in superconductivity have been made since 1986.
d) Superconductivity can be potentially applied to so many fields that trains, electronics or computers are only some examples of its uses.

41) *Choose the CORRECT answer: Superconductivity...*

a) means that no electric current is able to flow; therefore, scientists spent many years in their search of this absence of current.
b) means that electric current can be stored indefinitely with no energy loss. Before this could be obtained, scientists had to find possible superconducting materials.
c) makes a very efficient use of electricity in spite of the difficulty scientists are still having in finding the first possible superconducting materials.
d) means that electric current is stored indefinitely with no energy loss, thus making a very efficient use of electricity, which is something that scientists achieved in a very short time and without any difficulty.

42) *"is termed" means the same as:*

a) is known as b) called c) word d) is like

43) *"would be able to flow"* can be substituted by:

a) should be flown
b) must flow
c) could flow
d) will be capable of flow

44) *"as long as"* IS NOT A SYNONYM of one of these expressions. Which one?

a) provided
b) if
c) on condition that
d) unless

45) *"since"* means the same as:

a) because of
b) as
c) due to
d) owing to

46) *"breakthrough"* means:

a) step
b) invention
c) advance
d) drawback

47) *"...the powerful magnetic fields **needed** in..."* Here "needed" is the short way of saying:

a) which are needing
b) that needing
c) which are needed
d) that needed

48) *"These alloys might also **provide** the basis for..."* Here "provide" means:

a) predict
b) demand
c) ask
d) offer

49) *"higher speed processing components"* means:

a) components that work at high speed in processing
b) the process of making components at higher speed
c) components that can process at much higher speed
d) the high speed with which processing components work

50) *"amounts"* refers to:

a) quantities
b) degrees
c) parts
d) numbers

VOCABULARY

I. Choose the right alternative.

11) nuisance------> problem
13) fabric--------> material, texture
22) metal wear----> "fatiga de los materiales"
26) fire extinguisher---> device to put out a fire

II. Text: MODULATION.

line 4	dots and dashes----->	. and -
line 6	speech---------->	language, voice
line 17	sidebands---------->	"bandas laterales o de modulación"
line 19	envelope---------->	envolvente
line 23	fading---------->	attenuation

III. Text: SUPERCONDUCTIVITY.

line 8	coolant---------->	refrigerative liquid
line 15	breathe---------->	"respirar"
line 18	room temperature---->	"temperatura ambiente"
line 26	alloys---------->	"aleaciones"
line 29	sizable---------->	big, considerable

Result

V 6,0

ESCOLA UNIVERSITARIA POLITECNICA DE VILANOVA I LA GELTRU.

EXAMEN Nº 1
ASSIGNATURA: ANGLES II (TELECOMUNICACIONS)
IDENTIFICACIO DE LA PROVA: 340 321 00
CURS: 1993-94
CONVOCATORIA: Examen final de Juny 94
DURADA DE L'EXAMEN: 2 hores i 15 minuts
PUNTUACIO: 50 respostes correctes per aprovar (9 punts). Les incorrectes no descompten. La traducció és opcional i val per 1 punt sobre la notal final.

56%

I. Identify the mistake in these sentences.

1) It was not *until (a)* 1958 that microelectronics began with the development of ICs (integrated circuits) on silicon chips. This *led to (b)* a great increase in the use of electronics in every day items. The introduction of the microprocessor *was allow* (c) electronics *to be used (d)* for the control of many common processes.

2) Metal detectors, *despite (a)* their technical complexity, *is based on* (b) a few very simple principles. *The most important (c)* is *that of (d)* electromagnetic induction.

3) A music centre *can be classified* (a) *either (b)* a hi-fi (high-fidelity) system or a mid-fi system, *depending on (c)* the quality of *its (d)* reproduction.

4) *Since (a)* not everyone *is convinced of (b)* the need for such high quality TV systems, the move towards HDTV *is likely to be (c)* very gradual. The first High Definition TV receivers will not need *to can to* (d) process both the old and the new transmissions.

5) Microprocessors are now *used to (a)* control many household items. New entertainment devices have been developed, such as video recorders and CD players. In the future, *electronics (b)* is likely to become even more common in the home *because of* (c) multimedia entertainment systems and *computer-controlled robots (d)* are developed.

6) Those students from EUPVG will make a good *professional career (a)* in our company *as long as (b)* they have had a good *University training (c)* and have got their *University title* (d).

7) I'm *a third-year student (a)* of Mechanical Engineering. Next *course* (b) I will do my final project and after that I'll *have finished my studies (c)* and I'll *get my degree (d)*.

8) A good *mechanic (a)* must learn *mechanics (b)* and take courses at the University so that he/she can know everything about *the mechanical* (c) of machines and their *mechanism (d)*.

II. Choose the right alternative. Only ONE is correct.

9) _____ the ROM memory, the contents of the RAM memory are constantly changing, but they operate while the computer is switched on.

a) Dislike
b) Unlike
c) Not like
d) Like

10) The CPU (Central Processing Unit) is the main part of a computer which controls the rest of the system and ***performs*** all the arithmetic and logic operations on the data.
"performs" is a synonym of:

a) gives up
b) turns on
c) carries out
d) puts up

11) Noise, which is any kind of _____ signal, can be a problem with amplifiers.

a) unwanted
b) rejected
c) unwelcome
d) unacceptable

12) The communication of speech, text and other data by cable and radio is a _____ field of employment.

a) growth
b) grew
c) growing
d) grow

13) "The potential applications for superconductivity in new and existing technology seem ***to have no end***" means:

a) non-ending
b) endless
c) ending
d) ended

14) "***To make something long***" is:

a) to long
b) to length
c) to lengthen
d) to longen

15) "***Unlikely***" means:

a) dissimilar
b) dislike
c) improbable
d) alike

16) Fax machines can send a lot of information in seconds. However, a few seconds' interference on the phone line can make several lines of a document illegible. If the line is noisy, the sending machine will *decrease its speed* to reduce the amount of information lost.
The underlined expression means the same as:

a) slow down
b) speed up
c) go down
d) cut off

17) The machine _____ in spite of a breakdown in an important part of the system.

a) went on working
b) kept on work
c) went up working
d) went down work

18) In 1901 Marconi established long-distance telegraph communication and *discovered* how to overcome international distances by reflecting radio waves in the ionosphere.
The underlined verb means the same as:

a) came out
b) found out
c) gave up
d) made up

19) You can take this book home_____ you give it back to the librarian after the weekend.
Which one cannot be used in that sentence?

a) as long as
b) provided
c) unless
d) only if

20) Vibration sensors will automatically trigger the alarm system_____ someone tries to break into this building and steal something.

a) in case of
b) in the event of
c) unless
d) in case

21) A telephone network can be used to connect personal computers to an electronic mail system (e-mail)._____, a different channel of communication has to be used, such as radiolinks, to send and reply to an electronic message.

a) Therefore
b) Unless
c) Otherwise
d) Provided

22) "You will not catch the train in time ***if you don't leave now***" means the same as:

a) unless you leave now
b) provided you don't leave now
c) in case you leave now
d) as long as you leave now

23) If that material does not provide enough resistance, then it_____.
Which one of these is INCORRECT?

a) should be replaced
b) will be replaced
c) has to be replaced
d) would have replaced

24) _____ so many accidents in the lab this year if the students had kept in mind some safety precautions.

a) They wouldn't have been
b) There wouldn't have been
c) There will not have
d) There wouldn't have

25) We are making progress with superconductivity, but the real_____ in superconducting technology will be when scientists find a material that superconducts at room temperature.

a) breakthrough
b) drawback
c) outcome
d) breakdown

26) *Memories that only read and that can be programmed and erased* are:

a) erasable programmed read-only memories.
b) erase programme read-only memories.
c) erasable programmable read-only memories.
d) erased programmable read-only memories.

27) Configurations of the switcher which invert the voltage are:

a) voltage-inverting configurations switcher.
b) voltage-inverting switcher configurations.
c) inverting-voltage switcher configurations.
d) voltage-inverted switcher configurations.

28) *A system for cooling which is controlled in a mechanic way* is:

a) a mechanically-controlled cooling system.
b) a mechanic-controlled cooling system.
c) a mechanically-controlling cooling system.
d) a controlled-mechanically cooling system.

III. Read the text and answer these questions.

FREQUENCIES.

At very low frequencies (v.l.f.) the waves travel round the earth as if they *[29]*_____ in a waveguide bounded by the earth's surface and the ionosphere. The very low frequency range is mainly used for navigation and military applications. The familiar long (30 kHz-300 kHz) and medium (300 kHz-3 MHz) wave bands *[30]*_____ the low frequency (l.f.) and medium frequency (m.f.) bands, which are used for radio broadcasting. 2

Propagation in the short wave or high frequency (h.f.) band of 3 MHz-30 MHz is used for broadcasting, mainly over long distances, for maritime or aeronautical communications and for long distance speech and telex links.

Both very high frequency waves (30 MHz-300MHz) and ultra high frequency waves (300 MHz-3 GHz) propagate over relatively short distances *[31]* ***ranging from*** a few tens of kilometres to one or two hundred kilometres. The very high frequency band is used for high quality frequency modulated radio broadcasts *[32]*_____ the relatively large bandwidth available is traded for *[33]* ***an improved signal-to-noise ratio***. A radio frequency bandwidth of about 200 kHz is used for an audio signal bandwidth of 15 kHz. Both the very high frequency and ultra high frequency are used for television broadcasts. 13

The term microwaves is often applied to radio frequencies above 1 GHz (the upper limit is not usually defined precisely and merges into the infrared region of the electromagnetic spectrum). *[34]*_____, the microwave region includes some of the ultra high frequency band. It also includes the super high frequency band (s.h.f) of 3-30 GHz, and the extremely high frequency band (e.h.f.) of 30-300 GHz, sometimes *[35]* ***referred to as*** millimetre wave band. 17

Space wave propagation of narrow microwave beams is used for point-to-point communication over broad bands. An important application is the use of microwave links in telephone and telegraph systems. 22

Microwave telephone links normally use f.d.m. CCIR recommendations exist for systems at 2 and 4 GHz with up to 1800 telephone channels, and at 6 GHz with up to 2700 channels. A capacity of 1800 telephone channels is adequate for one colour television channel. One *[36]* ***increasingly*** important use of narrow beam microwave transmission is with satellites which can operate as repeaters for long distance telephone, television and data links.

From: Telecommunications. Technical Reading Skills in English by Donal Dancer, pp 15-16)

29.- a) will be b) would be c) were d) was

30.- a) are known as b) are divided into c) can be defined d) are called as

31.- *"ranging from"* (line 10) can be substituted by:
a) which ranges from c) that ranged from
b) which range from d) who are ranged from

32.- a) whose b) which c) that d) where

33.- ***"an improved signal-to-noise ratio"*** (line 14) means:
a) that the proportion between noise and signal is much better.
b) that there is a correspondence between signal and noise.
c) that the percentage between noise and signal is poorer.
d) that the correlation between noise and signal has to be improved.

34.- a) Therefore b) Since c) As a result of d) As

35.- ***"referred to as"*** (line 21) <u>IS NOT A SYNONYM</u> of one of these:
a) termed c) called
b) named d) described as

36.- ***"increasingly"*** (line 29) can be substituted by:
a) advancing c) progressively
b) developing d) intensively

ACCORDING TO THE TEXT,
WHICH FREQUENCIES ARE USED FOR THE FOLLOWING?

37.- TELEX
a) v.h.f. b) h.f. c) v.l.f. d) l.f. and m.f.

38.- TELEVISION
a) u.h.f., v.h.f. and microwave c) l.f. and m.f.
b) u.h.f. and v.h.f. d) v.h.f., u.h.f. and e.h.f.

39.- F.M. RADIO
a) u.h.f. and v.h.f c) u.h.f., v.h.f. and microwave
b) v.h.f d) l.f. and m.f.

40.- DATA LINKS
a) s.h.f. and e.h.f. c) v.h.f., s.h.f. and e.h.f.
b) microwave, u.h.f., s.h.f. and e.h.f. d) microwave

MATCH THESE SENTENCES WITH THE CORRESPONDING FIGURE:

41.- S.h.f. and u.h.f. signals are not reflected by the ionosphere, but pass through it into space.

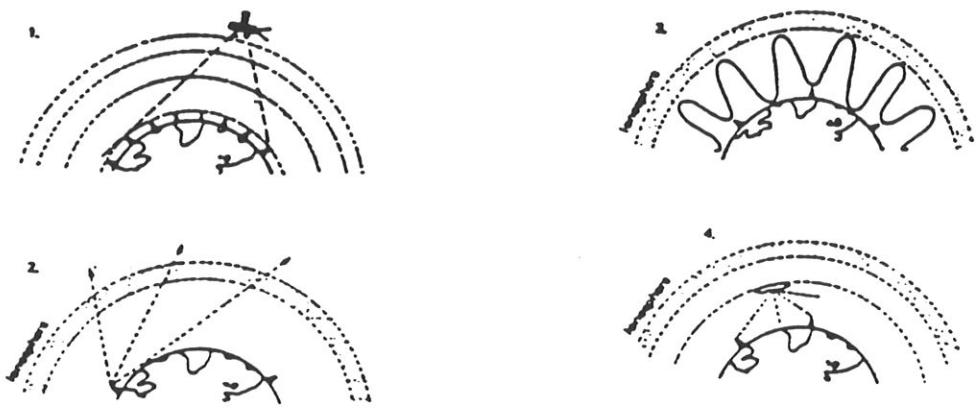
a) 1 (b) 2 c) 3 d) 4

42.- Microwaves can be transmitted around the earth by means of line-of-sight relay or by satellite.

(a) 1 b) 2 c) 3 d) 4

43.- L.f. wavelengths travel around the curvature of the earth using the surface and the ionosphere as a waveguide.

a) 1 b) 2 (c) 3 d) 4



IV. Choose the right option for these sentences:

44) In the sentence: *The insulators shall be placed between the plates*. ***SHALL*** indicates:

a) expectation
(b) that the instructions must be followed *exactly*
c) strong obligation
d) advice

45) Choose the verb which indicates the same as the underlined words in the sentence *The fault is possibly due to a short circuit*.

(a) could be due to
b) must be due to
c) ought to be due to
d) might to be due to

46) The cylinder head _____ removed when it is hot.

a) should
b) must to be
c) may have been
(d) must be

47) A diesel car is a car _____ engine is diesel.

a) which b) who (c) whose d) in which

48) Is that the scientist _____?

(a) you were talking to
b) who you were talking
c) whom you were talking with
d) to who you were talking

49) *Some of the problems **caused by** pollution can be eliminated. Caused by* can be substituted, without changing the meaning, by:

a) which are causing
(b) which are caused by
c) which cause
d) by which is caused

50) Which one is ***NOT CORRECT***?

a) The experiment he carried out was a success
b) The experiment that he carried out was a success
c) The experiment which he carried out was a success
(d) The experiment who he carried out was a success

51) The scientists ***who proved*** the effects of air pressure were Torricelli and Pascal. *Who proved* can be substituted by:

a) which proved
b) who proving
c) proved
(d) proving

52) ***Therefore*** is ***NOT A SYNONYM*** of one of the following:

a) Consequently b) Thus c) Hence (d) As a result of

53) The bars in jails are used to _____.

a) avoid prisoners from escaping.
(b) prevent prisoners from escaping
c) avoid prisoners escaping
d) prevent prisoners escaping

54) The engineer checked all the components _____ find the fault.

(a) so as to b) for c) so that d) in order

55) A magnifying glass is a device which _____ magnifying objects.

a) serves to
(b) is used for
c) is responsible to
d) is used in order to

56) A computer system is _____ hardware, software, personnel and communications.

a) composed into
b) comprised of
(c) made up of
d) divide into

57) A resistor _____ amplifying electric signals.

a) serves to
b) operates for
(c) performs the function of
d) enables

58) These books are classified _____ their author.

a) as b) into c) respect to (d) according to

59) The classification of elements is done _____ their atomic number. Which one is ***FALSE***?

a) in order to
b) according to
c) with respect to
d) on the basis of

60) This device is _____ many different components.

a) composed up of
b) divided by
c) comprised by
d) made up of

61) Arabic is written in the opposite direction to English, ***that is***, it is written from right to left. ***That is*** means the same as:

a) for example
b) namely
c) so that
d) for instance

62) Pollution _____ changes in the atmosphere. Which one is ***FALSE***?

a) produces b) results in c) results from d) brings about

63) The greenhouse effect ***is the result of*** pollution. Which one does not mean ***THE SAME***?

a) is produced by
b) is caused by
c) leads to
d) results from

64) _____ the change in the weather, hundreds of living creatures could become extint.

a) Because of b) Because c) As a result d) As

65) _____ the system did not work was because there was a failure in one of the components.

a) As a result of
b) Due to
c) The reason for
d) The reason why

66) They choose copper for the experiment _____ it is a good coductor.

a) since b) thus c) so d) therefore

67) They mechanised the factory. _____ some workers were sacked. Which one is ***FALSE***?

a) As a consequence b) Hence c) So d) Consequently

68) This valve allows _____.

a) fuel from flowing
b) fuel to flow
c) flow fuel
d) fuel to flowing

V. Now read this text carefully and answer the questions.

COMPUTERS AND EPIDEMIOLOGY: THE MICHELANGELO EFFECT.

A computer virus is a program or piece of a program that, when executed, "infects" another part of a computing system by making a copy of itself. Most PC-DOS viruses infect boot records of disks or executable programs. Computer viruses have been a major problem for their hosts for more than six years. Massive outbreaks have been rare, they only appear from time to time. But since society is beginning to rely more and more on computers, contagious programs are also beginning to seem as frightening as biological diseases.

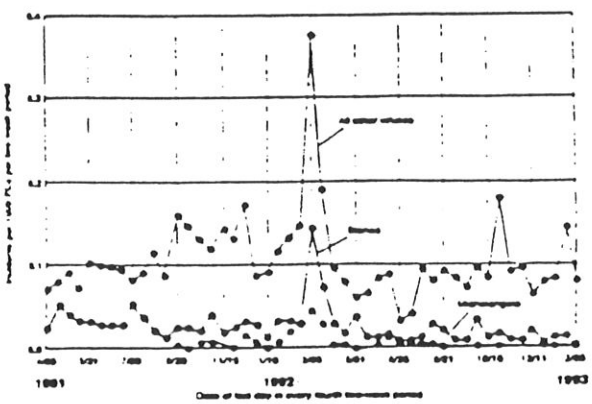
How bad is the problem today? How bad might it become? How might company managers help ensure safe computing environments? For answers to these questions, the behaviour of computer viruses must be understood at two levels: microscopic and macroscopic. The micro level is the focus of hundreds of researchers who dissect and try to kill off the dozens of new viruses written every month. In contrast, the macro view of computer viruses has been delayed. The lack of information about their frequency was evident during the hullabaloo over the Michelangelo virus two years ago, during which the effects of its disruption were overestimated.

A computer virus has never stirred up so much public hysteria as during the two-week period ending on March 6 1992. Front-page newspaper stories and evening news on TV reported that a terrible virus was ready to disrupt computers on the March 6 birthday of Michelangelo. The public was persuaded that this might be the big one --the electronic equivalent of the bubonic plague-- with millions of machines infected.

In fact, the number of machines infected by the Michelangelo virus was less than a widely quoted estimate of five million, and the damage it caused was slight. But, as shown in the graph below, all the publicity had an interesting effect on all computer viruses, including Stoned, the one most common at the time.

The rate at which incidents in the population sampled by IBM were reported peaked anomalously during this period, not because they actually came out all of a sudden, but because many viruses that had been infecting machines for some time were finally detected. Many users (both inside and outside the same population of hundreds of thousands of PCs) decided to scan their systems just because of the Michelangelo virus. In some cases, companies spent large amounts of time and money doing so. The scanners found any kind of recognizable virus in the system, such as Stoned. Due to this much heightened vigilance during the four-week period before March 6, eleven new viruses in the sample PC population were detected which was a high record.

The hysteria had two effects on computer viruses. First, because many users scanned their machines during the same period, the reservoir of viruses was drastically reduced both inside and outside the sample population, and many fewer virus incidents were reported in the succeeding weeks. Second, the increased installation of anti-virus software appears to have lowered the equilibrium level of many of the most common viruses, leaving it at about half of their previous frequence of occurrence. Still, despite some beneficial side effects, this kind of hysteria is better if it can be avoided.



(From: IEEE SPECTRUM MAY 1991, pp. 20-21)

69.- Which is ***FALSE*** according to the **first paragraph?**

a) Computers viruses can alter or destroy information contained in disks or programs when executed by making a copy of themselves and affecting other parts of a computing system.
b) Computer viruses are as terrible as biological diseases, since they can copy themselves and then spread into other parts of a computing system destroying all kinds of information.
c) Massive outbreaks of computer viruses started to appear repeatedly six years ago and since then they have become a major problem for their hosts. Now they are considered to be as dangerous as some biological diseases.
d) The dependence of society on computers is so important that, even though these viruses affect computers from time to time, they have become as frightening and dangerous for our society as biological diseases.

70.- Which is ***FALSE*** according to the **second paragraph?**

a) The way to deal with the problem of computer viruses and to make computing environments safe is to understand their behaviour from the microscopic and the macroscopic point of view.
b) Apart from the hundreds of researchers who are trying to detect and destroy all the new viruses that appear, the real problem with the behaviour of computer viruses is that it will be very difficult to have completely safe computing environments unless we have more information about their frequency.
c) The hullabaloo over the Michelangelo virus two years ago showed that the hundreds of researchers, who try to detect and destroy all new viruses, estimated too highly the effects of this virus. Thus, evidencing the lack of information about these viruses.
d) The disruption of the Michelangelo virus two years ago was delayed due to the fact that hundreds of researchers, who try to detect and destroy all new viruses written every month, estimated its frequency of appearance.

71.- Which is ***FALSE*** according to the **third paragraph?**

a) The Michelangelo virus gave rise to public hysteria during the two weeks in which it disrupted computers and infected millions of machines.
b) All the information the press and TV gave about the Michelangelo virus brought about public hysteria and made people believe that the effects of this electronic virus could be compared to the bubonic plague.
c) The Michelangelo was the most widely reported virus on newspapers and TV for two weeks before March 6 1992.
d) A computer virus has never been given so much attention on newspapers and TV as the Michelangelo, which was reported everywhere in the media to warn people that it would infect millions of machines.

72.- Which is ***TRUE*** according to the **fourth paragraph**?

a) The damage the Michelangelo virus produced was widely over five million machines infected.
b) The damage the Michelangelo virus caused was less important than it had previously been estimated, although there were slightly below five million machines infected.
c) The Michelangelo and the Stoned together, the most common viruses at the time, infected less than 1/5 million machines.
d) The Michelangelo virus caused little damage but infected more machines than they had previously estimated in the graph.

73.- According to the **fifth paragraph**?
What is the real consequence of all the publicity given to the Michelangelo virus on all the other computer viruses?

a) IBM decided to sample the population of hundreds of thousands of PCs and detected all the viruses that came out at the time.
b) Many users decided to scan the systems of their PCs and many companies decided also to spend a lot of time and money in scanning their systems to find any kind of recognizable virus.
c) During this period there were more incidents with viruses.
d) Eleven new viruses that had been infecting machines for some time were finally detected in the population sampled by IBM because of all the vigilance.

74.- Which of these is ***FALSE*** according to the **sixth paragraph**?

a) As a result of the scanning of the machines, the number of viruses and of incidents decreased outside and inside the sample population.
b) More anti-virus software has been installed, therefore, reducing both the number of many of the most common viruses and up to 50% of their previous frequence of occurrence.
c) All these positive effects meant that in succeeding weeks there was an increase in the installation of anti-virus software which decreased the level of viruses.
d) Even though all these side effects have contributed to prevent the number of viruses and incidents in PCs, it is much better to avoid this kind of hysteria.

75.- What is the **main idea** in the text?

a) If there had not been such a public hysteria about the effects of the Michelangelo virus, it would have never been possible to increase the installation of anti-virus software in many PCs.
b) All the publicity about the Michelangelo virus led to a higher degree of vigilance in PC systems which caused many other viruses that had been infecting machines to be detected.
c) Owing to the Michelangelo effect, many users and companies decided to scan their systems.
d) The disruption of the Michelangelo virus was not as terrible as everybody had predicted.

VOCABULARY.

PART I. Identify the mistake.

5) household items: artículos del hogar.

PART II. Choose the right alternative:

12)	speech:	habla, lenguaje
18)	overcome:	resolver el problema de
20)	trigger:	dispararse
	steal:	robar
21)	radiolinks:	radioenlaces
	reply:	contestar
26)	erase:	borrar

PART III. Text FREQUENCIES.

Line 2	bounded:	rebotadas, reflejadas
Line 3	range:	alcance
Line 13	traded:	intercambiadas
Line 17	merges:	se fusiona, se une
Line 22	narrow:	estrecho

PART IV. Choose the right option.

53)	jails:	cárceles
55)	magnifying glass:	lupa
63)	greenhouse effect:	efecto invernadero
67)	sacked:	despedidos

PART V. Text COMPUTERS AND EPIDEMIOLOGY: THE MICHELANGELO EFFECT.

Line 2	boot records:	programa de arranque
Line 4	hosts:	huéspedes
	outbreaks:	epidemias, estallidos
Line 5	rely:	depender
Line 6	frightening:	terroríficos
Line 12	delay:	retrasar
	lack:	falta
	hullabaloo:	jaleo, bullicio
Line 21	estimate:	estimación
Line 24	sampled:	muestreado
	peaked:	subió
Line 25	all of a sudden:	de repente
Line 34	reservoir:	reserva

EXAMEN nº 1
ASSIGNATURA: ANGLES II (TELEC-INDUST)
CODI: 340-73632-00-0-00
CURS: 93-94
CONVOCATORIA: 9 de setembre 1994
DURADA DE L'EXAMEN: 1 hora i 45 minuts
PUNTUACIO: 46 respostes correctes d'un total de 70 per aprovar.
Les incorrectes no descompten.

I. Choose the right option. Only ONE is correct.

1) A device which has been tested several times _____ to work properly.
   a) is expected
   b) is recommended
   c) can
   d) should

2) Thousands of telephone channels _____ be carried by optical fibre conductors.
   a) can
   b) must
   c) should
   d) shall

3) Excessive heat _____ damage electronic components.
   Which one is ***WRONG***?
   a) may
   b) might
   c) could
   d) must

4) Have you finished reading the report _____ I gave you?
   Which one is ***WRONG***?
   a) which
   b) that
   c) 0
   d) whom

5) That international company is a good place _____.
   Which one is ***WRONG***?
   a) where you can get a good job.
   b) which you can get a good job.
   c) in which you can get a good job.
   d) which you can get a good job in.

6) That is the scientist _____ we were talking.
   a) about who
   b) who
   c) about whom
   d) whom about

7) That is the computer _____ monitor doesn't work properly.
   a) whose
   b) which
   c) of which
   d) in which

18) All the accidents in the lab last year _____ carelessness.

a) resulted in
b) gave rise to
c) resulted from
d) were caused

19) Refractory metals are called refractory _____ their high melting point.

a) because of
b) because
c) since
d) on account

20) _____ the wide range of mechanical, physical and chemical properties, ferrous alloys are among the most useful of all metals.
Which one is ***WRONG***?

a) due to
b) owing to
c) as a result of
d) because

21) As a result of _____, the refrigerant condenses.
Which one is ***WRONG***?

a) increased pressure
b) pressure being increased
c) increasing pressure
d) increase pressure

22) The measuring instruments were defective. _____, the experiment was a failure.
Which one is ***WRONG***?

a) Therefore
b) Hence
c) Consequently
d) As

23) The insulation of a wire _____ people from receiving an electric shock.
Which one is ***WRONG***?

a) keeps
b) prevents
c) causes
d) stops

24) If the engine _____, this would probably mean the mixture is too weak.

a) overheats
b) overheated
c) had overheated
d) has overheated

25) If the lamp had ended black, this _____ due to a faulty lamp or starter.

a) would have been
b) had been
c) must be
d) would be

26) You can use my car _____ you fill in the tank when you come back.

a) provided
b) on condition
c) as
d) so long

27) Break the glass _____ fire.

a) in case
b) in the event of
c) in event of
d) in the case of

28) He studied hard for the exam, _____ he wouldn't have passed it.

a) unless
b) therefore
c) if
d) otherwise

II. Read the text carefully and choose the right option.

DIGITAL COMPUTERS AND THEIR USES.

In the digital computer the numbers to be manipulated are represented by sequences of digits which are first recorded in a suitable code --usually the binary code--, and then converted into positive and negative electrical impulses, and stored in electrical or magnetic registers [40]_____ are used basically for the same purpose as the counting wheels in a desk calculating machine.

*The technique of making the computer carry out a particular calculation [41]_____ "programming", which involves first [42] **breaking** the calculation **down** into a sequence of* 7
*arithmetic operations, and then preparing a series of instructions which [43]_____ _____ the required operation on the stores information in the correct order. It is now possible to add or subtract two large numbers in one to two microseconds, and to multiply or divide them in ten to twenty microseconds, thus [44] **enabling** a computer to perform as* 11
much arithmetic in a quarter of an hour as an efficienT clerk with pencil and paper [45]_____ hope to achieve in a lifetime.

*There are many situations [46]_____ this ability to handle and analyze large quantities of arithmetic data [47]_____ instructions is of great value. Some examples are fields of scientific investigation such as crystallography, atomic physics and astronomy where masses of experimental data are involved and complex theoretical concepts need to be tested against them; in engineering design where the design parameters, of which there are many, can be varied systematically and [48] **their** effects studied and optimized;* 19
[49] and for the storage of reference data in libraries and insurance offices in such a way as to afford ready access to particular references on request.

A particularly important application of the digital computer in simplified form is a component in the [50]_____, as the nerve centre which accumulates and analyses data in recording the operating conditions and performances of the plant, and sends out instructions, when appropriate, for their application. This is one aspect of what is referred to as "automation" --the replacement of human control by instrumental control. The completely automatic factory is no longer a fantasy. What is restraining its relization are the difficulties in handling the severe economic considerations and the complex human problems involved.

40.- a) who b) which c) where d) whose

41.- a) is known
b) is classified
c) is known as
d) may be defined

*42.- "**breaking** the calculation **down**" on line 7 means in this context:*
a) to finish the calculation
b) to damage the calculation
c) to divide the calculation
d) to reconstruct the calculation

III. Read the text carefully and choose the right option.

ELECTRIC PROTECTION DEVICES.

I. [51] This term refers to a particular type of equipment applied to electric power systems to detect abnormal conditions and to initiate appropriate action to correct the abnormal condition. From time to time, disturbances in the normal operation of electric power systems occur. [52] These may [53] be caused by natural phenomena, such as lightning, wind or snow; by accidental means [54] due to careless drivers, inadvertent acts by plant maintenance personnel, or other acts of human beings; or by conditions produced in the system itself, such as switching surges, load swings, or equipment failure. 4

II. [55]_____protective devices must be installed on a power system are to ensure continuity of electric service, to prevent injury to personnel, and to limit damage to equipment when abnormal situations occur. The application of these devices can vary very widely since [56] they are applied in proportion to the degree of protection required. 11

III. Zone Protection. [57] In order to apply protection, power systems [58] are divided into areas or zones. Each component of a power system corresponds to one of the five different zone classifications: generator, transformer, bus, transmission line, or motor. [59]_____, protection devices are applied to each zone to detect abnormal system conditions in that zone and to start actions for the removal of that zone from the rest of the system. [60] Figure 1 illustrates the principle of zone protection on a simple power system. As you can see, complete protection is guaranteed since all these zones overlap. The removal of only the malfunctioning part of the system ensures maximum electric service continuity. 17

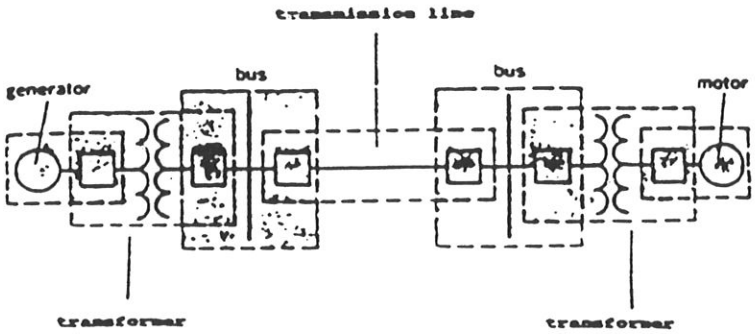


Fig. 1. Zones of protection on simple power system.

IV. Protective Relays. These are used to detect changes in the voltages and currents on a power system. Large variations in the voltages and currents on the system can cause the relay to operate. The operation of the relay [61] results in the opening of the circuit breakers to isolate that portion of the power system [62]_____an abnormal voltage or current condition. A fault in one part of the system affects all the other parts of the system. Thus, the relays in the power system must be coordinated to ensure the best quality of service to the loads, and to isolate the equipment near the fault in order to prevent excessive damage or personal hazard. [63] 22

53.- Give a synonym of **"be caused by"** on line 4:

a) result from
b) produce
c) be brought about by
d) lead to

54.- **"due to"** on line 5 could be substituted by:

a) as a result
b) as
c) since
d) because of

55.- a) The reasons for
b) The reasons why
c) Owing to
d) This is because of

56.- **"they"** on line 11 refers to:

a) application
b) abnormal conditions
c) protective devices
d) electric devices

57.- Give a synonym of **"In order to"** on line 12:

a) So as to
b) The function of
c) According to
d) For

58.- **"are divided into"** on lines 12-13 means the same as:

a) enable
b) are regulated by
c) belong to
d) are made up of

59.- a) So
b) Therefore
c) Since
d) As a result of

60.- What is the purpose of overlapping zones in zone protection? **(3rd paragraph)**

a) to guarantee partial protection.
b) to guarantee complete protection for the user.
c) to make it possible to remove the malfunctioning part without stopping the electric service of the whole power system.
d) to detect abnormal conditions in the system.

61.- **"results in"** on line 22 has a synonym in:

a) comprises
b) leads to
c) results from
d) serves to

62.- a) experiencing
b) who is experiencing
c) experienced
d) which is experienced

63.- When do protective relays operate? **(4th paragraph)**.

a) When there is a considerable large variation from normal in the voltages and currents of a power system.
b) When there is a fault in the power system.
c) When the circuit breakers open.
d) When a fault in one part of the system affects all the other parts of the system.

VOCABULARY.

PART 1.

13) brushgear----------escobilla
14) gauge----------indicador
15) tap----------grifo
16) cracking----------fisuración
19) melting point----------punto de fusión

PART 2. TEXT. DIGITAL COMPUTERS AND THEIR USES.

line 4 counting wheels----------ruedas de cómputo
line 7 involves----------implica
line 10 add----------añadir
subtract----------restar
line 12 clerk----------oficinista
line 13 to achieve in a lifetime---------conseguir en toda una vida
line 20 storage----------almacenado
line 21 to afford----------permitir
on request----------a petición de los interesados
line 27 is no longer----------ya no es
line 28 restraining----------frenando
handling----------el manejo

PART 3. TEXT. ELECTRIC PROTECTION DEVICES.

I. line From time to time----------de vez en cuando
line lightning----------relámpagos
line switching surges----------sobretensiones transitorias de conmutación.
line load swings----------fluctuaciones de carga
II. line injury----------daños, accidentes
line damage----------perjuicios, daños
line required----------necesaria
III. line removal----------eliminación, traslado
line overlap----------superponer
line ensure----------asegurar
IV. line relays----------relés
line circuit breakers----------cortacircuitos, interruptor automático.
line hazard----------peligro (personal)
V. line coil----------bobina, devanado
line plunger----------cortocircuito móvil, pasador
line Briefly----------para resumir brevemente
VI. line diverted----------desviada
line path----------senda
line reach----------alcanzar

EXAMEN nº 1
ASSIGNATURA: ANGLES II (TELECOMUNICACIONS)
IDENTIFICACIO DE LA PROVA: 34073210
CURS: 1992-93
CONVOCATORIA: Examen final 18 de Juny 1993
DURADA DE L'EXAMEN: 2 hores i 15 minuts
PUNTUACIO: 72 preguntes (9) + 1 punt de la traducció.
50 per aprovar d'un total de 72 preguntes.

I. Choose the correct answer. Only one is correct.

1.- A long-playing record recorded at 33 1/2 rpm _____ be played at 33 1/2 rpm.
a) might b) should to c) must d) ought

2.- An insulator is a material_____.
a) through whom electricity cannot flow
b) through which electricity cannot flow
c) that electricity cannot flow through
d) which electricity cannot flow by

3.- This is the overhead projector_____.
a) who professor H. works with
b) with whom professor H. works
c) with that professor H. works
d) which professor H. works with

4.- The article_____ is very good.
a) he wrote c) who wrote
b) who he wrote d) whom he wrote

5.- The computer system is divided_____ different parts.
a) as b) of c) into d) up

6.- The idea of keeping instructions for the computer inside the computer memory_____ significant changes in computer technology.
a) was given rise to c) resulted of
b) brought about d) produced by

7.- The company had to close down_____ the oil prices went up.
a) on account of b) due to c) because of d) as

8.- The motor overheated_____ dirt in the air gap.
a) because of b) because c) as d) since

9.- If you join these two sentences "*Heat causes expansion in substances. Heat makes the atoms and molecules move more quickly*", the result is:
a) Heat causes atoms and molecules moving more quickly
b) Heat causes atoms and molecules to move more quickly
c) Heat causes that atoms and molec. move more quickly
d) Heat causes atoms and molec. from moving more quickly

10) a) for
b) its function is to
c) so as to
d) in order for

11) One of the following <u>COULD NOT BE SUBSTITUTED BY</u> ***"in order to give off"***. Which one?
a) so as to give off
b) to give off
c) for giving off
d) for to give off

12) According to the first two paragrahs only <u>**ONE**</u> of these statements is ***TRUE***. Which one?
a) A non-directional receiving antenna has all-round sensitivity.
b) A directional-transmitting antenna transmits equally in all directions.
c) A non-directional antenna is used for point-to-point communication.
d) All antennas can be aimed.

13) a) which b) whose c) that d) whom

14) a) since b) as c) due to d) the reason why

15) a) will avoid having
b) avoid to have
c) would avoid having
d) prevent to have

16) ***"causing"*** means the same as:
a) who are causing
b) that causes
c) that are caused
d) which cause

17) a) in b) of c) into d) up

18) a) who b) whom c) that d) by which

19) ***"made up of"*** could be substituted by:
a) formed
b) divided
c) which constitutes
d) composed of

20) According to the description given in the last paragraph, choose the right name for each type of antenna:

a) *1. Rhombic antenna* *2. Yagi array* *3. Dish antenna*
b) *1. Dish antenna* *2. Rhombic antenna* *3. Yagi array*
c) *1. Yagi array* *2. Rhombic antenna* *3. Dish antenna*
d) *1. Dish antenna* *2. Yagi array* *3. Rhombic antenna*

21) According to the last two paragraphs. Only <u>**ONE**</u> of these statements is ***FALSE***. Which one?

a) Directional receiving antennas are equally sensitive in all directions.
b) TV reception can be affected by high ground or buildings.
c) A second TV picture can be caused by reflected signals.
d) Directional antennas can improve reception.

27) Satellites were soon used to:

a) broadcast TV programmes "live" in different parts of the world
b) connect computer terminals
c) send out one side of the Earth to the other
d) to link up one side of the Earth with satellites

28) a) was caused
b) resulted
c) produced by
d) has led to

29) Choose the option that is ***FALSE***.

a) The capacity of satellites has increased thanks to the use of digital transmission and multiplexing techniques.
b) The use of digital transmission and multiplexing techniques has contributed to enlarge the capacity of satellites.
c) The use of digital transmission and multiplexing techniques has increased and so has the capacity of satellites.
d) An enormous increase in the capacity of satellites has been observed due to the use of digital transmission and multiplexing techniques.

30) ***"went down"*** means the same as:

a) slowed down
b) increased
c) became more expensive
d) fell

41.- The opposite of "unable" is:

a) impossible
b) probable
c) capable
d) stable

42.- *Condensers that are cooled by air* are:

a) air-cooled condensers
b) cool-air condensers
c) air-cooling condensers
d) cooled-air condensers

43.- If our computer had worked quicker_____.

a) we might would finish
b) we would finish earlier
c) we could finish earlier
d) we would have finished earlier

44.- What is a "*radiating transmission line*" ?

a) It is a line for the transmission of radiation
b) It is the transmission of the line that radiates
c) It is a radiation of the transmission line
d) It is a line for transmission which radiates

45.- That German scientist <u>discovered</u> a new chemical formula.

a) found out
b) looked after
c) set up
d) gave up

46.- The discovery of penicillin was a very important_____.

a) output
b) breakthrough
c) breakdown
d) outbreak

47.- You are not allowed to take this exam _____you show me your identity card.

a) if
b) provided
c) unless
d) in case

48.- A screw in the engine <u>is getting loose</u> due to the vibration produced.

a) loosened
b) is lost
c) is losing
d) is loosening

49.- a) If you are in the third and you pass all your courses, then you'll be a licence in Engineering next year.

b) If you are a third-year student and you pass all your courses, then you'll take your degree in Engineering next year.

c) If you are in the third course and you pass all your years, then you'll finish your career in Engineering next year.

d) If you are in your third year and you pass all your courses, then you'll get your title in Engineering next year.

V.- Read the text and then answer the questions. Only one answer is correct.

FIBER OPTIC COMMUNICATIONS.

In 1966, Dr. K.C. Kao, a research scientist at ITT's Standard Communication Laboratories in England, proposed that low-loss silica fibers would provide the means to *[57]*_____. That proposal marked the beginning of the era of practical lightwave communications. When Dr. Kao made public his proposal, the attenuation of the existing glass fibers was measured in thousands of decibels per kilometre. By 1970, Corning achieved an attenuation of 20 dB/Km in an ultrapure fiber. *[58] This achievement stimulated an intense competition that pushed fiber loss lower and lower.* Finally, in 1979, a sicentist at Japan's Nippon Telegraph and Telephone Public Corporation announced the development of a silica fiber having a loss of only 0.2 dB/km, the *[59]*_____ lower limit for silica.

All this means that a 3-dB/Km glass fiber which is 1 km long attenuates only half the light injected into one end. In other words, if *[60]*_____ a miliwatt of optical radiation into one end of a 1-km fiber, you would receive half a miliwatt at the other end. Soli-state detectors can easily detect signals having an amplitude of only a few tens of nanowatts and less, so it is possible to transmit high quality data for 10 Km or more over a 3-dB/Km fiber without the need for a repeater.

This capability allows *[61]*_____ to outperform conventional metallic cables and wave guides. Although fibers are not yet fully cost competitive with metallic conductors, they are much lighter and smaller, therefore, much easier to transport and *[62] instal.*

However, the best way to understand how fiber optics communication network operates is *[63] to view* it as a natural extension of the present telephone system. In the early telephone systems, a sensitive membrane in the headset translated the pressure changes that were caused by the human voice into a series of alternations in an electric current. The pattern of electrical changes passed along a series of copper wires and *[64]*_____ _____ to the receiver of the other telephone, where the electrical signal *[65] was changed back into* the sound of a voice.

Nowadays, in order to accommodate all the telephone calls, computer-to-computer talk, and satellite transmissions, the mechanisms between the two telephone receivers have changed a lot. Although voices are still converted from *[66]*_____ into electrical signals, the signals do not travel as a smoothly varying flow of current; instead, they are turned into digital information --on and off pulses alternating at the rate of thousands per second-- and then mixed up with hundreds of other conversations. *[67] Computers within the telephone system unsort all the mixed-together digital messages as they approach their destinations.*

Even our sophisticated modern system has a limiting factor: the digitized flow of electrons over metal wires has a certain message-carrying capacity, and *[68] this* restricts the *[69] thickness* and the speed with which the messages can be sent. However, when pulses of light are substituted for the *[70]*_____ charges, with optical fibers substituting for the metal wires, the maximum limit for information flow *[71] increases* dramatically. *[72] The immense difference in information-carrying capacity (known as bandwidth in the jargon) is due to the much higher frequency of light waves.* Audible sound *[73]*_____ air pressure oscillations in the 20-20,000 Hz range. However, light vibrates in the 10 to 10 Hz range.

68.- The word "*this*" (line 36) refers to:

a) the metal wires
b) the digitized flow of electrons
c) the sophisticated modern system
d) the specific message-carrying capacity

69.- "*thickness*" (line 37) in the text means:

a) the number of factors
b) the number of wires
c) the number of messages
d) the number of electrons

70.- a) electrical
b) electronic
c) electric
d) electronics

71.- Choose a verb whose meaning is <u>the opposite of</u> "*increases*" in the text:

a) is put down
b) goes down
c) is lifted
d) is lowered

72.- According to lines 39-41, only one of these statements is **<u>FALSE</u>**:

a) The difference in the bandwidth depends on the frequency of light waves.
b) The difference in the information-carrying capacity is affected by the frequency of light waves.
c) The high frequency of light waves is what causes an important difference in the bandwidth.
d) The frequency of light waves is due to the immense difference existing between the information-carrying capacity and the bandwidth.

73.- a) is produced
b) is resulted in
c) is caused by
d) cause

EXAMEN Nº 2
ASSIGNATURA: ANGLES II (TELECOMUNICACIONS)
IDENTIFICACIO DE LA PROVA: 340 731 20
CURS: 1992-93
CONVOCATORIA: 3 de Setembre (93)
DURADA DE L'EXAMEN: 1 HORA i 45 MINUTS
PUNTUACIO: 52 preguntes (9 punts) + la traducció (1 punt)
36 respostes correctes per aprovar. La traducció només es corregeix si s'aprova l'examen.

I. Choose the right option. Only one is correct.

1.- "Ought to" is a synonym of:
a) must
b) should
c) may
d) can

2.- In order to write a successful program, a programmer_____ plan the program first.
a) could
b) may
c) should
d) must to

3.- Choose the verb that indicates the same degree of probability as that in the underlined expression:
"That diskette <u>is certain to</u> have a virus. You have used it in many different PCs and now it isn't working properly"
a) can
b) might
c) should
d) must

4.- Are those the colleagues_____?
a) for who you worked
b) with who you worked
c) for whom you worked with
d) with whom you worked

5.- This effect occurs in materials_____ tensile strength is very low.
a) that
b) whose
c) by means of which
d) who

6.- Many people_____ live in isolated areas are now using electronic mail and the fax service.
a) that
b) whom
c) which
d) whose

7.- Only one of these is <u>not correct</u>. Which one?
a) The book he wrote was a best-seller
b) the book that he wrote was a best-seller
c) The book which he wrote was a best-seller
d) The book who he wrote was a best-seller

8.- The function of the barometer is_____ atmospheric pressure.
a) to supply
c) supplying
c) for supplying
d) for to supply

20.- ONE of the following CANNOT BE USED in the sentence:
"This material will probably melt_____the temperature is high enough. If t doesn't melt, we won't be able to use it."

a) provided that
b) as long as
c) otherwise
d) only if

21.- You won't be able to keep all that information in the computer *if you don't* register it in the hard disk memory.
The words UNDERLINED could be substituted by:

a) only if you
b) unless you
c) provided you
d) in case of

22.- The alarm should sound_____ there is a fire.

a) in case
b) in case of
c) unless
d) in the event of

23.- *"Chemicals which are constructed synthetically"* are:

a) constructed synthetically chemicals
b) chemicals constructed synthetically
c) synthetically-constructing chemicals
d) synthetically-constructed chemicals

24.- *"An airport which has five terminals"* is:

a) a terminal-five airport
b) a five-terminals airport
c) a five-terminal airport
d) an airport five-terminal

25.- After having studied for four years, he *gave up* Engineering.

a) abandoned
b) interrupted
c) postponed
d) continued

26.- We are losing a lot of money because we cannot_____ costs.

a) find out
b) set up
c) cut down
d) slow down

27.- Apple has released a new kind of pocket machine capable of receiving and sending e-mails and of recognizing a man's handwriting. This is going to be a major_____ in the world of minicomputers for everyday use. Lots of businessmen will use them in the street.

a) outcome
b) breakthrough
c) layout
d) outstanding

28.- "Not to like" means:

a) to unlike
b) to non-like
c) to dislike
d) to mislike

29.- That machine is_____. It will break down one of these days.

a) non-worked
b) misworked
c) underworked
d) overworked

30.- "The design was produced *without much care*" means:

a) carefully
b) carelessly
c) careless
d) careful

33.- One of these CANNOT BE USED in that sentence:

a) namely
b) called
c) named
d) known as

34.- "*an optical mechanism by means of a laser*" is a:

a) mechanism optical laser
b) laser mechanism optical
c) optical mechanism lasers
d) laser optical mechanism

35.- "*a disc made of perspex which is specially prepared*" is:

a) a specially-preparing perspex disc
b) a specially-prepared perspex disc
c) a perspex disc specially-prepared
d) a perspex special disc prepared

36.- "***such as***" could be substituted in that sentence by:

a) like
b) an example of
c) that is
d) namely

37.- "***caused by***" can be substituted by:

a) which is causing
b) which is caused by
c) which results in
d) which results

38.- a) because
b) as
c) due to
d) since

39.- "***which makes***" could be substituted by:

a) making
d) that make
c) made
d) who makes

40.- a) recording maximum capacity
b) maximum capacity recording
c) recording capacity maximum
d) maximum recording capacity

41.- Only **ONE** of these is **FALSE**, according to the last two paragraphs:

a) In a CD system the electronic samples used for a recording regulate the laser beam that creates a pattern of pits.

b) The length of the pits and the distance between them is what represents the audio pattern of a CD when a laser beam at constant speed is directed at its surface.

c) The electronic signals the laser beam creates, when it is directed at the surface of a CD, are amplified in the loudspeaker.

d) A digital-to-analogue converter receives the changing reflection of the laser beam, when it is directed at the surface of a CD, and produces the electronic signals which have to be amplified to drive a loudspeaker.

43.- Only ONE of the following statements is TRUE. Mark it. (lines 1-3).

a) LOSs are not very useful for telecommunications if their line of sight is around 15 minutes.

b) LOSs are only used for telecommunications when they are small due to the fact that their line of sight of an earth station is approximately 15 minutes.

c) Since the line of sight of LOS is about 15 minutes, they are practically of no use for telecommunications.

d) Although the line of sight of LOSs is about 15 minutes, they are often used for telecommuications.

44.- Only ONE of the following statements is TRUE. Mark it. (lines 3-5).

a) Remote sensing is a very special field.

b) It has been shown that digital, processing techniques are quite valuable in the field of remote sensing.

c) The field of remote sensing has been developed due to the digital, processing techniques.

d) Digital, processing techniques have shown that the field of remote sensing is highly valuable.

45.- "*motionless*" (line 13) means:

a) quiet
b) moving
c) slowly
d) unmoved

46.- "*Therefore*" (line 16) has a synonym in:

a) For
b) Nevertheless
c) Consequently
d) However

47.- a) As a result
b) As a result of
c) Since
d) The reason why

48.- "*fall*" (line 22) has a synonym in:

a) decrease
b) improve
c) go off
d) increase

49.- "*likely*" (line 25) has a synonym in:

a) similar
b) positive
c) probable
d) agreeable

50.- "*to connect*" (line 27) means:

a) to line up
b) to link up
c) to feed up
d) to pick up

VOCABULARY.

PART I.

3.-	overhead projector:	proyector de transparencias
8.-	dirt:	suciedad
	air gap:	escape del aire

PART II THE ANTENNA

line 4	located:	situado
line 7	locations:	lugares
line 9	aimed:	dirigida, orientada
line 13	share:	compartir
line 15	to point:	orientar
line 17	ghosts:	fantasmas
line 19	troublesome:	problemático
line 22	poles:	poste, polo
line 24	matching:	unido, con el que se une o empareja
line 25	rods:	varillas
line 27	horn:	bocina, embudo

PART III SATELLITES

line 8	"live":	en directo

PART IV

33.-	fill:	llenar
40.-	leads:	cables
48.-	screw:	tornillo
55.-	network:	red
	mail:	correo

PART V FIBER OPTIC COMMUNICATIONS

line 6	achieved:	consiguió
line 17	outperform:	tener una mayor capacidad
line 22	headset:	auricular
line 24	pattern:	modelo
line 30	smoothly:	liso, llano, poco
line 32	within:	dentro de
line 33	sort:	clasificar
line 40	jargon:	jerga

TELECOMUNICACIONS.

NOM I COGNOMS._____
SEGON PARCIAL / EXAMEN FINAL_____
PUNTUACIO. 1 Punt sobre la nota final.
Només es corregeix si s'aprova l'examen.

Translate the following sentences into English without changing the meaning of the original sentence.

1.- *Cuando acabe la carrera intentaré hacer pronto el proyecto para poder conseguir un buen trabajo como ingeniero en alguna empresa importante.*

2.- *El desarrollo de nuevos tipos de energía evitará la contaminación del medio ambiente.*

3.- *Es imposible guardar todas esa información en un ordenador a menos que la grabes en la memoria del disco duro.*

4.- *Aquel coche aumentó la velocidad y como consecuencia sufrió una avería.*

5.- *A Blaise Pascal se le conoce como el inventor de la primera máquina calculadora.*

6.- *Se llevaron a cabo tests con el fin de detectar posibles fallos en el sistema.*

7.- *Si hubiera sabido cómo manejar un ordenador lo habría utilizado.*

8.- *A menudo se utiliza el cobre para los cables ya que es un buen conductor.*

VOCABULARI.
2.- medio ambiente: environmental pollution
3.- guardar: keep / grabar: register
5.- calculadora: adding
7.- manejar: operate

VOCABULARY.

I.

3.-	properly:	adecuadamente
5.-	tensile strength:	punto de tensión
9.-	gloves:	guantes
13.-	coil:	espiral, bobina
15.-	to be cleared:	borrarse
16.-	craanes:	grúas
17.-	earthquake:	terremoto
20.-	melt:	derretirse
27.-	release:	sacar al mercado
	handwriting:	escritura

II.- TEXTO **AUDIO RECORDING SYSTEMS.**

(1)	recordings:	grabaciones
(2)	patterns:	patrones, modelos
(3)	groove:	ranura
(4)	spin:	girar
(9)	beam:	rayo
(12)	crackle:	ruido
(13)	dust:	polvo
	jumping:	saltos
	scratches:	rayas (en el disco)
(17)	pits:	surcos
(19)	tracks:	pistas
(21)	revolve:	girar
(22)	is fed into:	se alimenta en

III.- TEXTO **COMMUNICATION SATELLITES...**

(2)	line of sight:	a la vista
(4)	remote sensing:	lectura distante
(13)	within:	dentro de
(15)	handle:	manejar
(32)	charges:	costes
(33)	rise:	incremento
	worlwide:	mundial

TELECOMUNICACIONS.

NOM I COGNOMS._____
SEGON PARCIAL / EXAMEN FINAL_____
PUNTUACIO. 1 Punt sobre la nota final.
Només es corregeix si s'aprova l'examen.

Translate the following sentences into English without changing the meaning of the original sentence.

1.- *La forma más común en la que aparece la energía es el calor.*

2.- *El experimento finalmente falló. Esto es debido a la inexperiencia del científico que no comprobó todos los datos.*

3.- *A menudo se utiliza el cobre para los cables ya que es un buen conductor.*

4.- *A este modelo mecánico le siguió en 1822 el de Charles Babbage, que produjo un ordenador digital al que llamó motor analítico.*

5.- *Cuando acabe la carrera intentaré hacer pronto el proyecto para poder conseguir un buen trabajo como ingeniero en alguna empresa importante.*

6.- *La electrónica industrial empezó con los transductores que permitían el control remoto de los procesos.*

7.- *No podré aprobar el examen a menos que lea ese libro.*

8.- *Si Newton hubiera vivido en el siglo XX habría hecho más descubrimientos.*

VOCABULARY.

4.- analítico:	analytical
6.- transductores:	transducers
remoto:	remote
8.- descubrimientos:	discoveries

Resolt V 6,4

ESCOLA UNIVERSITARIA POLITECNICA DE VILANOVA I LA GELTRU.

EXAMEN Nº 2
ASSIGNATURA: ANGLES II (INDUSTRIALS)
IDENTIFICACIO DE LA PROVA: 340 322 00
CURS: 1993-94
CONVOCATORIA: Examen final de Juny 94
DURADA DE L'EXAMEN: 2 hores i 15 minuts
PUNTUACIO: 50 respostes correctes per aprovar (9 punts). Les incorrectes no descompten. La traducció és opcional i val per 1 punt sobre la notal final.

I. Identify the mistake in these sentences.

1) A good ***mechanic (a)*** must learn ***mechanics (b)*** and take courses at the University so that he/she can know everything about ***the mechanical*** (c) of machines and their ***mechanism (d)***.

2) Those students from EUPVG will make a good ***professional career (a)*** in our company ***as long as (b)*** they have had a good ***University training (c)*** and have got their ***University title*** (d).

3) ***Since (a)*** not everyone ***is convinced of (b)*** the need for such high quality TV systems, the move towards HDTV ***is likely to be (c)*** very gradual. The first High Definition TV receivers will not need ***to can to*** (d) process both the old and the new transmissions.

4) I'm ***a third-year student (a)*** of Mechanical Engineering. Next ***course*** (b) I will do my final project and after that I'll ***have finished my studies (c)*** and I'll ***get my degree (d)***.

5) Microprocessors are now ***used to (a)*** control many household items. New entertainment devices have been developed, such as video recorders and CD players. In the future, ***electronics (b)*** is likely to become even more common in the home ***because of*** (c) multimedia entertainment systems and ***computer-controlled robots (d)*** are developed.

6) Metal detectors, ***despite (a)*** *their technical complexity*, ***is based on*** (b) a few very simple principles. ***The most important (c)*** is ***that of (d)*** electromagnetic induction.

7) A music centre ***can be classified*** (a) ***either (b)*** a hi-fi (high-fidelity) system or a mid-fi system, ***depending on (c)*** the quality of ***its (d)*** reproduction.

8) It was not ***until (a)*** 1958 that microelectronics began with the development of ICs (integrated circuits) on silicon chips. This ***led to (b)*** a great increase in the use of electronics in every day items. The introduction of the microprocessor ***was allow*** (c) electronics ***to be used (d)*** for the control of many common processes.

II. Choose the right alternative. Only ONE is correct.

9) _____ the ROM memory, the contents of the RAM memory are constantly changing, but they operate while the computer is switched on.

a) Dislike
b) Unlike
c) Not like
d) Like

10) The CPU (Central Processing Unit) is the main part of a computer which controls the rest of the system and ***performs*** all the arithmetic and logic operations on the data.
"performs" is a synonym of:

a) gives up
b) turns on
c) carries out
d) puts up

11) Noise, which is any kind of _____ signal, can be a problem with amplifiers.

a) unwanted
b) rejected
c) unwelcome
d) unacceptable

12) The communication of speech, text and other data by cable and radio is a _____ field of employment.

a) growth
b) grew
c) growing
d) grow

13) "The potential applications for superconductivity in new and existing technology seem ***to have no end***" means:

a) non-ending
b) endless
c) ending
d) ended

14) "***To make something long***" is:

a) to long
b) to length
c) to lengthen
d) to longen

15) "***Unlikely***" means:

a) dissimilar
b) dislike
c) improbable
d) alike

16) Fax machines can send a lot of information in seconds. However, a few seconds' interference on the phone line can make several lines of a document illegible. If the line is noisy, the sending machine will *decrease its speed* to reduce the amount of information lost.
The underlined expression means the same as:

a) slow down
b) speed up
c) go down
d) cut off

17) The machine _____ in spite of a breakdown in an important part of the system.

a) went on working
b) kept on work
c) went up working
d) went down work

18) In 1901 Marconi established long-distance telegraph communication and *discovered* how to overcome international distances by reflecting radio waves in the ionosphere.
The underlined verb means the same as:

a) came out
b) found out
c) gave up
d) made up

19) You can take this book home_____ you give it back to the librarian after the weekend.
Which one cannot be used in that sentence?

a) as long as
b) provided
c) unless
d) only if

20) Vibration sensors will automatically trigger the alarm system_____ someone tries to break into this building and steal something.

a) in case of
b) in the event of
c) unless
d) in case

21) A telephone network can be used to connect personal computers to an electronic mail system (e-mail)._____, a different channel of communication has to be used, such as radiolinks, to send and reply to an electronic message.

a) Therefore
b) Unless
c) Otherwise
d) Provided

22) "You will not catch the train in time ***if you don't leave now***" means the same as:

a) unless you leave now
b) provided you don't leave now
c) in case you leave now
d) as long as you leave now

23) If that material does not provide enough resistance, then it_____.
Which one of these is INCORRECT?

a) should be replaced
b) will be replaced
c) has to be replaced
d) would have replaced

24) _____ so many accidents in the lab this year if the students had kept in mind some safety precautions.

a) They wouldn't have been
b) There wouldn't have been
c) There will not have
d) There wouldn't have

25) We are making progress with superconductivity, but the real_____ in superconducting technology will be when scientists find a material that superconducts at room temperature.

a) breakthrough
b) drawback
c) outcome
d) breakdown

26) *Memories that only read and that can be programmed and erased* are:

a) erasable programmed read-only memories.
b) erase programme read-only memories.
c) erasable programmable read-only memories.
d) erased programmable read-only memories.

27) Configurations of the switcher which invert the voltage are:

a) voltage-inverting configurations switcher.
b) voltage-inverting switcher configurations.
c) inverting-voltage switcher configurations.
d) voltage-inverted switcher configurations.

III. Read the text and answer these questions.

The fantastic market rise in electronics in recent decades reflects a circuit building revolution. Expectations of function are ever increasing, demanding more complex, more reliable, more compact and cheaper circuits than were possible in the early days of electronics.

In the earliest circuits, large components (valve holders, capacitors, etc.) **(28)**_____ into a chassis and connected by a nest of **(29)** ***colour-coded wires***. Putting this lot together required a small army of solderers. The invention of transistors around 1950 announced the revolution. The size of active devices was cut a thousandfold, and **(30) they** needed only one-tenth of the voltage to run them, **(31) allowing** much smaller capacitors to be used. And in circuits with no functional need for power (such as signal amplifiers), introducing transistors reduced the power by a factor of a hundred; so resistors became smaller. All this miniaturization was well served by a new form of circuit construction **(32)** ***in which*** the wires were replaced by a pattern of conductors fixed onto one side of the substrate (This new word emphasises that the board **(33)**_____ both the insulation between conductors and for their mechanical support). The wire terminations of the devices poked through holes from the blank side of the board and were soldered to the conducting regions on the other side. This sort of cicuit assembly **(34)**_____ a printed circuit board (PCB). The formation of the pattern of conductors was to some extent a mechanised process, but at this stage each device still had to be placed and soldered by hand.

To reach today's level of of circuit complexity, the problems of productivity and reliability had to be solved. To make circuits of present-day complexity, production lines of people making solder joints one at a time would be prohibitively slow and expensive, and the consequences of malfunctional joints rather nasty. Suppose as few as one in ten thousand joints is no good. If systems containing a thousand joints are in production, then, on average, only 10% will not work and the fault may be easily found. But if each job **(35)** _____ ten thousand connections there would be a poor chance that any would work and the fault finding would be more difficult.

(36) _____ there are more companies designing and building customized printed circuit boards than are engaged in any other activity in the electronics industry. Although the substrate is still **(37)** ***a polymeric insulating board***, the conducting tracks still copper, and soldering the main method of fixing devices, PCBs have come a long way since the 1950's. Most PCB's are now assembled by robot placement and soldered in a single pass through a soldering machine. The benefits of speed, accuracy, reliability and reduced labour more than compensate for the capital investment needed to **(38)** ***set up*** production facilities.

28) a) had been built
(b) were built
c) are built
d) was built

29) What is a ***colour-coded wire***? (line 6)
a) a wire which codes colours
b) a coloured wire used for coding
(c) a wire which is coded by using colours
d) a coloured wire code

30) ***They*** on line 9 refers to:
a) transistors
(b) devices
c) solderers
d) wires

31) ***Allowing*** on line 9 can be substituted by:
a) preventing
b) causing
(c) enabling
d) keeping

32) ***In which*** on line 13 could be substituted by:
a) which
b) that
(c) where
d) in that

33) (a) is responsible for
c) performs the function of
b) serves to
d) is used

34) a) can be defined
(b) is known as
c) is called as
d) namely

35) a) would contain
b) will contain
c) had contained
(d) contained

36) (a) Nowadays
b) Actually
c) in the early days
d) Really

37) Which one is ***FALSE***? A ***polymeric insulating board*** is:
(a) a polymeric board which is insulated
b) a polymeric board which is used for insulating
c) a polymeric board which insulates
d) an insulating board made of polymer

38) ***set up*** on line 37 means the same as:
a) invent
b) enlarge
(c) establish
d) erect

39) Which title would you choose for this text?
a) Today's production of PCB's
b) The earliest circuits
(c) The evolution in the production of PCB's
d) The invention of transistors

40) According to the **second paragraph**, which of these statements is ***TRUE***?

a) The earliest circuits were soldered by the army.
b) After the invention of transistors around 1950, the circuit assembly changed.
c) The production of PCBs was a completely mechanised process.
d) After the invention of transistors, circuits were reduced and conductors were replaced by wires.

41) One of these statements is ***FALSE*** and does not mean the same as the lines 25-27 of the **third paragraph**. Which one?

Suppose as few as one in ten thousand joints is no good. If systems containing a thousand joints are in production, 10% will not work.

a) Provided that systems containing a thousand joints are in production, 10% will not work.
b) As long as systems containing a thousand joints are in production, 10% will not work.
c) Unless systems containing a thousand joints are in production, 10% will not work.
d) On condition that systems containing a thousand joints are in production, 10% will not work.

42) According to the **last paragraph**. Which has been the main change in the production of PCBs?

a) Today designing and printing PCBs is the main activity in the electronics industry.
b) The substrate, the conducting tracks and the way of fixing devices have changed.
c) Now the assembly process is almost completely mechanised.
d) The earliest circuits were more accurate and reliable.

IV. Choose the right option for these sentences:

43) *A system for cooling which is controlled in a mechanic way* is:

a) a mechanically-controlled cooling system.
b) a mechanic-controlled cooling system.
c) a mechanically-controlling cooling system.
d) a controlled-mechanically cooling system.

44) In the sentence: *The insulators shall be placed between the plates*. ***SHALL*** indicates:

a) expectation
b) that the instructions must be followed *exactly*
c) strong obligation
d) advice

45) Choose the verb which indicates the same as the underlined words in the sentence *The fault is possibly due to a short circuit.*

a) could be due to
b) must be due to
c) ought to be due to
d) might to be due to

46) The cylinder head _____ removed when it is hot.
a) should
b) must to be
c) may have been
d) must be

47) A diesel car is a car _____ engine is diesel.
a) which b) who c) whose d) in which

48) Is that the scientist _____?
a) you were talking to
b) who you were talking
c) whom you were talking with
d) to who you were talking

49) *Some of the problems **caused by** pollution can be eliminated. Caused by* can be substituted, without changing the meaning, by:
a) which are causing
b) which are caused by
c) which cause
d) by which is caused

50) Which one is ***NOT CORRECT***?
a) The experiment he carried out was a success
b) The experiment that he carried out was a success
c) The experiment which he carried out was a success
d) The experiment who he carried out was a success

51) The scientists ***who proved*** the effects of air pressure were Torricelli and Pascal. *Who proved* can be substituted by:
a) which proved
b) who proving
c) proved
d) proving

52) ***Therefore*** is ***NOT A SYNONYM*** of one of the following:
a) Consequently b) Thus c) Hence d) As a result of

53) The bars in jails are used to _____. → por lo tanto
a) avoid prisoners from escaping.
b) prevent prisoners from escaping
c) avoid prisoners escaping
d) prevent prisoners escaping

54) The engineer checked all the components _____ find the fault.
a) so as to b) for c) so that d) in order

55) A magnifying glass is a device which _____ magnifying objects.
a) serves to
b) is used for
c) is responsible to
d) is used in order to

56) A computer system is _____ hardware, software, personnel and communications.
a) composed into
b) comprised of
c) made up of
d) divide into

57) A resistor _____ amplifying electric signals.
a) serves to
b) operates for
c) performs the function of
d) enables

58) These books are classified _____ their author.
a) as b) into c) respect to (d) according to

59) The classification of elements is done _____ their atomic number. Which one is ***FALSE***?
(a) in order to
b) according to
c) with respect to
d) on the basis of

60) This device is _____ many different components.
a) composed up of
b) divided by
c) comprised by
(d) made up of

61) Arabic is written in the opposite direction to English, ***that is***, it is written from right to left. ***That is*** means the same as:
a) for example
(b) namely
(a saber)
c) so that
d) for instance

62) Pollution _____ changes in the atmosphere. Which one is ***FALSE***?
a) produces b) results in (c) results from d) brings about

63) The greenhouse effect ***is the result of*** pollution. Which one does not mean ***THE SAME***?
a) is produced by
b) is caused by
(c) leads to
d) results from

64) _____ the change in the weather, hundreds of living creatures could become extinct.
(a) Because of b) Because c) As a result d) As

65) _____ the system did not work was because there was a failure in one of the components.
a) As a result of
b) Due to
c) The reason for
(d) The reason why

66) They choose copper for the experiment _____ it is a good coductor.
(a) since b) thus c) so d) therefore

67) They mechanised the factory. _____ some workers were sacked. Which one is ***FALSE***?
a) As a consequence b) Hence (c) So d) Consequently

68) This valve allows _____.
a) fuel from flowing
(b) fuel to flow
c) flow fuel
d) fuel to flowing

V. Now read this text carefully and answer the questions.

COMPUTERS AND EPIDEMIOLOGY: THE MICHELANGELO EFFECT.

A computer virus is a program or piece of a program that, when executed, "infects" another part of a computing system by making a copy of itself. Most PC-DOS viruses infect boot records of disks or executable programs. Computer viruses have been a major problem for their hosts for more than six years. Massive outbreaks have been rare, they only appear from time to time. But since society is beginning to rely more and more on computers, contagious programs are also beginning to seem as frightening as biological diseases.

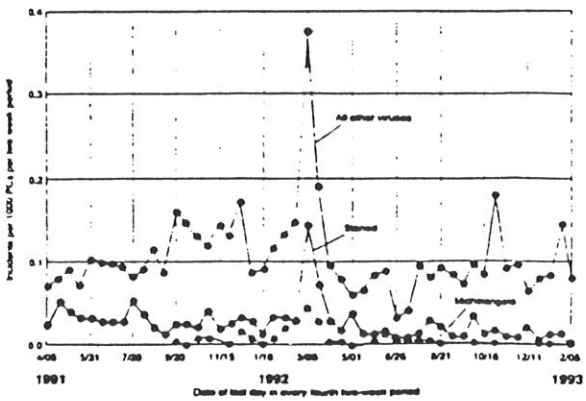
How bad is the problem today? How bad might it become? How might company managers help ensure safe computing environments? For answers to these questions, the behaviour of computer viruses must be understood at two levels: microscopic and macroscopic. The micro level is the focus of hundreds of researchers who dissect and try to kill off the dozens of new viruses written every month. In contrast, the macro view of computer viruses has been delayed. The lack of information about their frequency was evident during the hullabaloo over the Michelangelo virus two years ago, during which the effects of its disruption were overestimated.

A computer virus has never stirred up so much public hysteria as during the two-week period ending on March 6 1992. Front-page newspaper stories and evening news on TV reported that a terrible virus was ready to disrupt computers on the March 6 birthday of Michelangelo. The public was persuaded that this might be the big one --the electronic equivalent of the bubonic plague-- with millions of machines infected.

In fact, the number of machines infected by the Michelangelo virus was less than a widely quoted estimate of five million, and the damage it caused was slight. But, as shown in the graph below, all the publicity had an interesting effect on all computer viruses, including Stoned, the one most common at the time.

The rate at which incidents in the population sampled by IBM were reported peaked anomalously during this period, not because they actually came out all of a sudden, but because many viruses that had been infecting machines for some time were finally detected. Many users (both inside and outside the same population of hundreds of thousands of PCs) decided to scan their systems just because of the Michelangelo virus. In some cases, companies spent large amounts of time and money doing so. The scanners found any kind of recognizable virus in the system, such as Stoned. Due to this much heightened vigilance during the four-week period before March 6, eleven new viruses in the sample PC population were detected which was a high record.

The hysteria had two effects on computer viruses. First, because many users scanned their machines during the same period, the reservoir of viruses was drastically reduced both inside and outside the sample population, and many fewer virus incidents were reported in the succeeding weeks. Second, the increased installation of anti-virus software appears to have lowered the equilibrium level of many of the most common viruses, leaving it at about half of their previous frequence of occurrence. Still, despite some beneficial side effects, this kind of hysteria is better if it can be avoided.



(From: IEEE SPECTRUM MAY 1993, pp. 20-21)

69.- Which is ***FALSE*** according to the **first paragraph**?

a) Computers viruses can alter or destroy information contained in disks or programs when executed by making a copy of themselves and affecting other parts of a computing system.
b) Computer viruses are as terrible as biological diseases, since they can copy themselves and then spread into other parts of a computing system destroying all kinds of information.
c) Massive outbreaks of computer viruses started to appear repeatedly six years ago and since then they have become a major problem for their hosts. Now they are considered to be as dangerous as some biological diseases.
d) The dependence of society on computers is so important that, even though these viruses affect computers from time to time, they have become as frightening and dangerous for our society as biological diseases.

70.- Which is ***FALSE*** according to the **second paragraph**?

a) The way to deal with the problem of computer viruses and to make computing environments safe is to understand their behaviour from the microscopic and the macroscopic point of view.
b) Apart from the hundreds of researchers who are trying to detect and destroy all the new viruses that appear, the real problem with the behaviour of computer viruses is that it will be very difficult to have completely safe computing environments unless we have more information about their frequency.
c) The hullabaloo over the Michelangelo virus two years ago showed that the hundreds of researchers, who try to detect and destroy all new viruses, estimated too highly the effects of this virus. Thus, evidencing the lack of information about these viruses.
d) The disruption of the Michelangelo virus two years ago was delayed due to the fact that hundreds of researchers, who try to detect and destroy all new viruses written every month, estimated its frequency of appearance.

71.- Which is ***FALSE*** according to the **third paragraph**?

a) The Michelangelo virus gave rise to public hysteria during the two weeks in which it disrupted computers and infected millions of machines.
b) All the information the press and TV gave about the Michelangelo virus brought about public hysteria and made people believe that the effects of this electronic virus could be compared to the bubonic plague.
c) The Michelangelo was the most widely reported virus on newspapers and TV for two weeks before March 6 1992.
d) A computer virus has never been given so much attention on newspapers and TV as the Michelangelo, which was reported everywhere in the media to warn people that it would infect millions of machines.

72.- Which is ***TRUE*** according to the **fourth paragraph**?

a) The damage the Michelangelo virus produced was widely over five million machines infected.
b) The damage the Michelangelo virus caused was less important than it had previously been estimated, although there were slightly below five million machines infected.
c) The Michelangelo and the Stoned together, the most common viruses at the time, infected less than 1/5 million machines.
d) The Michelangelo virus caused little damage but infected more machines than they had previously estimated in the graph.

73.- According to the **fifth paragraph**?
What is the real consequence of all the publicity given to the Michelangelo virus on all the other computer viruses?

a) IBM decided to sample the population of hundreds of thousands of PCs and detected all the viruses that came out at the time.
b) Many users decided to scan the systems of their PCs and many companies decided also to spend a lot of time and money in scanning their systems to find any kind of recognizable virus.
c) During this period there were more incidents with viruses.
d) Eleven new viruses that had been infecting machines for some time were finally detected in the population sampled by IBM because of all the vigilance.

74.- Which of these is ***FALSE*** according to the **sixth paragraph**?

a) As a result of the scanning of the machines, the number of viruses and of incidents decreased outside and inside the sample population.
b) More anti-virus software has been installed, therefore, reducing both the number of many of the most common viruses and up to 50% of their previous frequence of occurrence.
c) All these positive effects meant that in succeeding weeks there was an increase in the installation of anti-virus software which decreased the level of viruses.
d) Even though all these side effects have contributed to prevent the number of viruses and incidents in PCs, it is much better to avoid this kind of hysteria.

75.- What is the **main idea** in the text?

a) If there had not been such a public hysteria about the effects of the Michelangelo virus, it would have never been possible to increase the installation of anti-virus software in many PCs.
b) All the publicity about the Michelangelo virus led to a higher degree of vigilance in PC systems which caused many other viruses that had been infecting machines to be detected.
c) Owing to the Michelangelo effect, many users and companies decided to scan their systems.
d) The disruption of the Michelangelo virus was not as terrible as everybody had predicted.

VOCABULARY.

PART I. Identify the mistake.

5) household items: artículos del hogar.

PART II. Choose the right alternative:

12)	speech:	habla, lenguaje
18)	overcome:	resolver el problema de
20)	trigger:	dispararse
	steal:	robar
21)	radiolinks:	radioenlaces
	reply:	contestar
26)	erase:	borrar

PART III. Text.

Line 6	nest:	haz
Line 9	thousandfold:	mil veces
Line 16	poke through:	salirse
Line 24	joints:	juntas
Line 24	nasty:	molestas, desagradables
Line 33	conducting tracks:	bandas conductoras

PART IV. Choose the right option.

53)	jails:	cárceles
55)	magnifying glass:	lupa
63)	greenhouse effect:	efecto invernadero
67)	sacked:	despedidos

PART V. Text COMPUTERS AND EPIDEMIOLOGY: THE MICHELANGELO EFFECT.

Line 2	boot records:	programa de arranque
Line 4	hosts:	huéspedes
	outbreaks:	epidemias, estallidos
Line 5	rely:	depender
Line 6	frightening:	terroríficos
Line 12	delay:	retrasar
	lack:	falta
	hullabaloo:	jaleo, bullicio
Line 21	estimate:	estimación
Line 24	sampled:	muestreado
	peaked:	subió
Line 25	all of a sudden:	de repente
Line 34	reservoir:	reserva

Resultados V 5,2

ESCOLA UNIVERSITARIA POLITECNICA DE VILANOVA I LA GELTRU.

EXAMEN Nº 2
ASSIGNATURA: ANGLES II (INDUSTRIALS)
IDENTIFICACIO DE LA PROVA: 340 332 00
CURS: 1993-94
CONVOCATORIA: Avançat de Desembre
DURADA DE L'EXAMEN: 1 HORA i 45 MINUTS
PUNTUACIO: 42 respostes correctes d'un total de 60 per aprovar. Les incorrectes no descompten.

I.- Identify the mistake in these sentences.

chemist

1) A good ***chemical*** *(a)* must learn ***chemistry*** *(b)* and take courses at the University so that he/she can know everything about ***chemicals*** *(c)* and about how to modify products ***chemically.*** *(d)*

?

2) In a circuit ***which*** *(a)* the ***angular phase difference*** *(b)* ***between*** *(c)* the current and the voltage is zero, the two functions ***are said to be*** *(d)* in phase.

3) She is ***a third-year student*** *(a)* taking ***courses*** *(b)* in Mechanical Engineering. Next year she will have to do her final project, but when she ***finishes her career*** *(c)* she will have to get ***a job.*** *(d)*

4) A computer system ***consists of*** *(a)* a central processing unit and a number of devices, ***which they feed*** *(b)* information ***to*** *(c)* the central processing unit and receive information ***from*** *(d)* it.

5) The term "learning experiences" ***refers to*** *(a)* those activities and experiences ***that*** *(b)* learners undergo ***in order acquire*** *(c)* the ***desired*** *(d)* performances and behaviours.

6) The lab was not ***well-equipped*** *(a)*. ***Therefore,*** *(b)* we managed ***to carry out*** *(c)* the experiment ***successfully*** *(d)*.

7) The report explains ***the reason for why*** *(a)* a ***well-documented*** *(b)* body of information ***showing*** *(c)* that noise affects humans ***both*** *(d)* physiologically and psychologically is so necessary.

II.- Choose the right alternative. Only ONE is correct.

8) Alexander Graham Bell's invention in 1876, the telephone, led to a revolution in the world of communications.
"led to" is not a synonym of one of the following:
a) brought about
b) gave rise to
c) prevented from
d) resulted in

9) Low frequency and medium frequency bands are used _____ radio broadcasting.
a) for
b) to
c) for to
d) so as to

10) Lubricating oil in engines _____.
Which one is not correct?
a) prevents from friction
b) prevents them from metal wear
c) avoids friction
d) avoids that metal wears

11) Most materials _____ conductors or insulators.
a) may be classified
b) can be classified as
c) belong into
d) can be divided as

12) Under certain conditions semiconductors _____ easily but in others they behave as insulators.
a) allow that a current flows
b) allow to flow a current
c) allow a current to flow
d) allow a current flowing

13) If the student _____ the fire extinguisher in time, there wouldn't have been such a destructive fire in the lab. It was completely destroyed.
a) had used
b) used
c) has used
d) had been used

14) To install something is:
a) to keep it up
b) to set it up
c) to stand it up
d) to put it on

15) If the supply voltage is not normal, then the supply circuit _____.
Which one of these is incorrect?
a) should be checked
b) will be checked
c) would have checked
d) has to be checked

16) "Likely" means:
a) nicely
b) alike
c) similar
d) probable

allow (permitir, acceder)

17) _____ was an important engineer.
Which of these is incorrect?
a) The man that he had read about
b) The man who he had read about
c) The man he had read about
d) The man about who he had read (?)

18) One of the main problems_____ was the application of steam to industrial machinery.
a) that with engineers had to deal
b) with engineers had to deal
c) which engineers had to deal with
d) engineers had to deal with which

19) Ecological communities,_____ organisms depend on one another for survival, can easily be destroyed by pollution.
a) who b) whose (cuyos) c) which d) that

20) If solar energy_____ easier to apply, we would use it more widely.
a) were b) is c) would be d) can be

21) I haven't brought the articles with me_____ is a nuisance. (molestia)
a) that b) who c) the which d) which

22) You are not allowed to take this exam_____ you show me your identity card.
a) if b) unless (a menos que) c) in case d) provided

23) In case of fire extend this liquid over the fabric.
The expression that means "in case of" in this context is:
a) If b) Whether c) Provided that d) In the event of

24) This is one of the reasons_____ this engine doesn't work properly.
a) because b) why c) on which d) what

25) A heated body_____ energy in the form of electromagnetic waves.
a) gives in b) gives up c) gives off d) gives back

26) _____ a rise in temperature, the component broke down.
a) Since
b) Because of
c) As a result
d) Due

27) "Not to prove something" is:
a) to improve it
b) to misprove it
c) to approve it
d) to disprove it

28) When a person is more estimated than he/she is supposed to, we say that he/she is_____.
a) overestimated
b) underestimated
c) misestimated
d) unestimated

therefore (por eso, por lo tanto)

29) The verb "ENABLE" has a different meaning from:
a) allow b) forbid c) permit d) let

ENABLE
(permitir (prohibir)

III. Read the text carefully and then choose the ONLY possible answer.

SUPERCONDUCTIVITY

About eighty years ago it was found that when mercury was cooled to 4.2 K (4.2 degrees above absolute zero on the Kelvin scale) it exhibited almost no resistance to electric current. This phenomenon ***[36] is termed*** *superconductivity*. Superconductivity and its applications are exciting because if a substance could be cooled low enough, an electric current ***[37] would be able to flow***, and also to be stored indefinitely, with no energy loss ***[38] as long as*** the temperature remained constant. This could be the most efficient use of electricity available. However, many years passed before possible superconducting materials and coolants were found. 8

Until 1987, superconductivity had been possible only at extremely low temperatures. To be able to make superconductivity practical, it was necessary to find an element which could cool a material to such a low temperature but could remain liquid. Before 1987 liquid helium was used ***[39] since*** it is the only medium that remains a liquid below 13 K. Then, in 1987, Dr Paul Chu, from the University of Houston, announced that he had found a compound that fully superconducts at 90 K, using liquid nitrogen, a very aboundant element which makes up 78 % of the air we breathe, as a coolant. In 1988 Japanese and American scientists, 15
working independently, discovered a new compound which superconducts at 120 K and which is easy to work with. The real ***[40] breakthrough*** in superconducting technology will be when scientists find a material that superconducts at room temperature. 18

Since there is no electrical resistance, superconductivity provides many applications for governments and industry in electronics, scientific research, the transmission of electricity and other fields. One of the most promising future applications is the use of superconductivity in maglevs (magnetic levitation trains). These types of trains have been in development since the 1960's. Cheaper superconducting technology may make them commercially possible. New superconducting alloys might also be used in generating the powerful magnetic fields ***[41] needed*** in particle accelerators used in physics research, and at greatly reduced cost. These alloys might also ***[42] provide*** the basis for ***[43] higher speed processing components*** in 26
supercomputers. The potential applications for superconductivity in new and existing technology seem endless. Japanese, German and American corporations are spending considerable ***[44] amounts*** of time and money on sizable research projects. However, 29
according to many experts, widespread use of superconductivity is at least a decade away.

(Questions from number 30 to 35 refer to the content of the text in general)

30) *Superconductivity is so interesting and promising because...*
   a) when scientists can find superconducting materials and coolants, we will then have an efficient use of electricity with no energy loss. However, this is not possible yet.
   b) mercury can be cooled to 4.2 K, showing no resistance to electric current.
   c) the most efficient use of electricity can be obtained with the appropriate superconducting materials and coolants.
   d) this way, we can cool mercury or other substances to very low temperatures.

31) *Superconductivity is especially practical if...*

a) liquid helium can be cooled to a very low temperature.
b) the compound remains liquid below 90 K.
c) materials superconduct at extremely low temperatures.
d) materials superconduct at temperatures as warm as possible.

32) *Although superconductivity offers endless future applications, the main limitations...*

a) have been technological; that is to say, finding compounds which superconduct at warm temperatures.
b) have been commercial, as in the magnetic levitation trains.
c) have been overcome, so they no longer exist.
d) have been economic, since great amounts of time and money are necessary and only American and Japanese governments have made research independently.

33) *Which is the CORRECT statement?*

a) Superconductivity will not be widely used and applied until more corporations take it more seriously.
b) We'll have to wait for at least another decade to see how superconductivity is widely used.
c) Experts believe that the most important advances in superconductivity took place a decade ago and that now we can only expect some improvements.
d) Superconductivity will provide many applications when no electrical resistance is obtained. When this happens, then the first applications will appear.

34) *One of these statements is FALSE. Which one?*

a) With superconductivity, electric current can be stored indefinitely with no energy loss.
b) Until 1987, liquid nitrogen was used as a coolant to achieve superconductivity.
c) Some new discoveries in superconductivity have been made since 1986.
d) Superconductivity can be potentially applied to so many fields that trains, electronics or computers are only some examples of its uses.

35) *Choose the CORRECT answer: Superconductivity...*

a) means that no electric current is able to flow; therefore, scientists spent many years in their search of this absence of current.
b) means that electric current can be stored indefinitely with no energy loss. Before this could be obtained, scientists had to find possible superconducting materials.
c) makes a very efficient use of electricity in spite of the difficulty scientists are still having in finding the first possible superconducting materials.
d) means that electric current is stored indefinitely with no energy loss, thus making a very efficient use of electricity, which is something that scientists achieved in a very short time and without any difficulty.

36) *"is termed" means the same as:*

a) is known as b) called c) word d) is like

37) *"would be able to flow"* can be substituted by:

a) should be flown
b) must flow
c) could flow
d) will be capable of flow

38) *"as long as"* IS NOT A SYNONYM of one of these expressions. Which one?

a) provided
b) if
c) on condition that
d) unless (A menos que)

39) *"since"* means the same as:

a) because of
b) as
c) due to
d) owing to

40) *"breakthrough"* means:

a) step
b) invention
c) advance (avance, progreso)
d) drawback

campo mag.

41) *"...the powerful magnetic fields needed in..."* Here "needed" is the short way of saying:

a) which are needing
b) that needing
c) which are needed
d) that needed

42) *"These alloys might also provide the basis for..."* Here "provide" means:

a) predict
b) demand
c) ask
d) offer

43) *"higher speed processing components"* means:

a) components that work at high speed in processing
b) the process of making components at higher speed
c) components that can process at much higher speed
d) the high speed with which processing components work

44) *"amounts"* refers to:

a) quantities
b) degrees
c) parts
d) numbers

IV. Read the text carefully and then answer the questions below. Only ONE is correct.

OIL

When planets and animals die, they normally decay, helped along by fungi, bacteria and the natural chemicals in the environment. Once decomposed, they ***[51] provide*** nutrients for living organisms, and the respiration of the micro-organisms ***[52] which cause decay*** releases carbon dioxide into the atmosphere. Over a period of several hundred million years, however, comparatively small amounts of organic material have been trapped under layers of silt, soil or volcanic rock and, deprived of oxygen, have not fully decomposed. Instead, they have formed deposits of coal, natural gas and oil, often located far beneath the land surface or the sea-bed.

Oil is usually found in porous rock under a layer of impermeable rock ***[53] which [54] prevents it from escaping***. It can then only be reached by drilling. The initial gushing of oil out of a drill pipe ***[55] is caused by*** the pressure of the gas trapped and compressed immediately above the oil deposits. In time, this pressure ***[56] decreases*** and the oil has to be pumped to the surface. The crude oil raised directly from wells is not yet ready for use. It has to be refined. The first stage in this process is fractional distillation in a fractionating column. Those fractions, ***[57] such as*** petrol and kerosene, which are lighter and more volatile, move towards the top of the column before condensing. The heavy residual fuel at the base of the column is extremely impure.

But distillation does not produce enough high grade petrol ***[58] to meet today's high demand***. The petrol offered for sale to motorists is a blend of straight distilled petrol produced by chemical modification from certain of the other distillates.

As more and more people own cars, the future looks less and less hopeful. It has taken about 6000 years for the world's oil reserves to be formed. It will probably take us only a little over a hundred years to exhaust them. The age of the internal combustion engine ***[59] may turn out to be*** short and highly destructive. Our grandchildren may well be the last generation to drive ***[60]*** _____ . We can only share scientists' hopes that alternative sources of energy to meet our needs will have been found by the time the world's coal and oil reserves finally run out.

(Questions from number 45 to 50 follow the order of paragraphs in the text)

45) *Fungi and bacteria...*

a) are decomposing agents.
b) are decomposed agents.
c) are helped by plants and animals to die.
d) help the natural chemicals in the environment to die

46) The decomposition of dead matter...

a) must be complete for oil to be formed.
b) plays no role in the formation of oil.
c) is not full when dead matter is in contact with oxygen.
d) is a useful natural process, but it is even more useful when it does not decompose fully.

47) Oil...

a) gushes out of porous rocks by itself.
b) has to be pumped to the surface before the initial gushing.
c) must be pumped only after the gas pressure decreases.
d) must first be pumped; later it pours out suddenly and violently, thus facilitating its extraction.

48) The petrol sold at petrol stations...

a) has not been chemically treated.
b) comes directly from the well.
c) has previously been blended and then refined.
d) is the result of blending crude oil with certain chemical products.

49) Only ONE of these statements is **FALSE**. Which one?

a) In a hundred year's time there will probably be no oil reserves.
b) The world's oil reserves are decreasing rapidly.
c) Scientists don't think that there is any kind of fuel which can be used instead of coal or oil.
d) The age of cars will be more dangerous to man than he had previously thought.

50) This passage deals with...

I.- The future of the internal combustion engine
II.- New possibilities of refining oil.
III.- The formation, extraction and exhaustion of oil.

a) only I is correct
b) only II is correct
c) II and III are correct
d) I and III are correct

proporcionar, suministrar

51) "***provide***" means:

a) form
b) help
c) supply
d) extract

52) "***which cause decay***" can be shortened as:

a) caused decay
b) causing decay
c) cause decay
d) decayed

53) "***which***" refers to:

a) oil
b) a porous rock
c) impermeable rock
d) finding

54) "***prevents it from escaping***" means the same as:

a) causes it to escape
b) avoids it from escaping
c) allows it to escape
d) avoids escape

55) "***is caused by***" can be substituted by:

a) results from
b) produced
c) results in
d) leading to

56) "***decreases***" means the same as:

a) augments
b) speeds up
c) is reduced
d) slows down

57) "***such as***" is synonym of:

a) namely
b) like
c) that is
d) example

58) "***to meet today's high demand...***" means:

a) satisfy
b) find
c) know
d) look for

59) "*the internal combustion engine* ***may turn out to be...***" could be substituted by:

a) ought to be
b) may be in the end
c) should probably be
d) may give rise to

60) *cars which are powered by petrol* are:

a) cars power petrol
b) petrol power cars
c) petrol-powered cars
d) powered-petrol cars

VOCABULARY

I. Identify the mistake.

5) term----------> word
undergo--------> go through

II. Choose the right alternative.

10) metal wear----------> "fatiga de los metales"
13) fire extinguisher-----> device to put out a fire
21) nuisance----------> problem
23) fabric----------> material, texture

III. Text: SUPERCONDUCTIVITY.

line 8	coolant---------->	refrigerative liquid
line 15	breathe---------->	"respirar"
line 18	room temperature---->	"temperatura ambiente"
line 26	alloys---------->	"aleaciones"
line 29	sizable---------->	big, considerable

IV. Text: OIL.

line 1	fungi---------->	"hongos"
line 4	releases---------->	sets free
line 5	layers---------->	"capas"
line 6	silt---------->	"cieno, barro"
	deprived of--------->	without
line 7	far beneath--------->	deep down, under
line 8	sea-bed---------->	the bottom of the sea
line 10	drilling---------->	"perforación"
	gushing---------->	coming out
line 13	wells---------->	"pozos"
line 19	blend---------->	mixture
	straight---------->	pure

EXAMEN: 1
ASSIGNATURA: ANGLÈS II (Telecomunicacions)
CODI DE LA PROVA: 340-32596-00-0-00
CURS: 1995-96
CONVOCATORIA: 18 de Juny 1996
DURADA DE L'EXAMEN: 1 hora i 30 minuts.
PUNTUACIO: 35 respostes correctes de 50 per aprovar. Les incorrectes no descompten.

I. Identify the mistake in the following sentences.

1) The greatest problem of atmospheric pollutants ***(a) results from*** human activity ***(b) who comprises*** carbon monoxides, hydrocarbons, particulates, sulphur oxides and nitrogen oxides, in that order. About 50 % of the major pollutants in the U.S.A. ***(c) are caused by*** the use of ***(d) the internal combustion engine***.

2) If this new technology ***(a) were developed***, then ***(b) there would have been*** many advantages for the local people ***(c) such as*** the creation of new jobs and the greater prosperity that it ***(d) would bring.***

3) ***(a) When making*** an internal telephone call, the signal may travel a distance of 72,000 km. ***(b) The reason why,*** it is not surprising ***(c)that*** 600 milliseconds pass between the time you finish speaking and the time when the reply ***(d) comes back.***

4) Disinfection of water is the killing of ***(a) disease-causing microorganisms*** that ***(b) they*** may contain. In the process, bacteria are reduced in number ***(c) as long as*** complete sterilization is obtained. Chlorine in its various forms has been widely used to disinfect water and to ***(d) prevent odors from appearing***.

5) Microwave engineering is the branch of ***(a) electrical*** engineering ***(b) that*** ***(c) deal with*** the transmission, control, detection and generation of radio waves ***(d) whose*** wavelength is short compared to the physical dimensions of the system.

6) The ***(a) chemical*** and process industries ***(b) are made up by*** the manufacturers of chemicals, petroleum refiners, petrochemical plants, paper industry, etc. These industries require good ***(c) engineering*** for their refrigeration ***(d) since*** almost every installation is different and the cost of each installation is high.

7) The use of water power involves the transformation of ***(a) mechanical*** energy from one form to another. ***(b) Hence***, 100 per cent is theoretically possible. All ***(c) actual*** methods for the large-scale use of molecular and nuclear energy ***(d) are based on*** the evolution of energy as heat.

8) This year I'm still ***(a) a third-year student*** with many ***(b) courses*** to pass in June. But next year, I hope to finish my Final Project and my ***(c) university formation***. Then I will be able to look for a good job as an engineer ***(d) in which*** I can be promoted.

II. Choose the right option. Only one is correct.

9) The move towards high definition TV **is likely to** be very gradual .
"is likely to" can be substituted by:
a) must b) should c) may d) might

10) Closing the switch _____ current to flow through the coil.
a) prevents b) stop c) enables d) cause

11) The drum machine stores sound **which** has been recorded digitally.
"which" can be substituted by:
a) Ø b) who c) that d) whose

12) All students ***shall*** study a broad range of subjects before specialising.
"shall" can be substituted by:
a) are recommended to c) are required to
b) can choose to c) will possibly

13) Privatization will _____ increased foreign competition.
WHICH IS NOT CORRECT?
a) give rise to b) lead to c) bring about d) results from

14) Material which reinforces fiberglass is...
a) fiberglass-reinforced material c) fiberglass-reinforcing material
b) reinforced-fiberglass material d) reinforcing-fiberglass material.

15) Currently researchers are developing ***machines which are based on computers and are used to diagnose illness***.
The phrase in **bold type** can be substituted by the following compound:

a) illness-diagnosing computer-based machines
b) diagnosing-illness computer-based machines
c) illness-diagnosed based computer machines
d) diagnosed-illness based computers machines

16) If American calculator makers_____ more attention to their Asian competitors, they _____ the battle as quickly as they did.

a) paid/ would lose c) had paid/ would lose
b) paid/ would not have lost d) had paid/ would not have lost

17) You _____ approach the problem in any way you wish.
a) must b) may c) need to c) have to

18) *If we increase the thickness, the steel plate will be stronger* **DOES NOT MEAN THE SAME AS:**

a) As long as we increase the thickness, the steel plate will be stronger.
b) Unless we increase the thickness, the steel plate will not be stronger.
c) We will increase the thickness. Otherwise, the steel plate will be stronger.
d) The steel plate will be stronger provided we increase the thickness.

19) ***They didn't spend much money on new machinery*** could be rewritten as:
There was little _____ on new machinery.

a) outlay b) feedback c) outcome d)input

20) The current rose above the maximum. _____, the circuit-breaker opened.
WHICH IS NOT CORRECT?

a) Consequently
b) Since
c) Hence
d) As a result

21) Vulcanised rubber ***breaks down*** _____ the effects of oxygen and ultraviolet light.

a) owing to b) since c) caused by d) results in

III. Read the following text and answer the questions below.

NETWORK GOALS

[1] Many organizations already have a substantial number of computers in operation, often located far apart. For example, a company with many factories may have a computer at each location to keep track of inventories, monitor productivity, and do the local payroll. Initially, each of these computers may have worked in isolation from the others, but at some point, management may have decided to connect them to be able to extract and correlate information about the entire company. 3

[2] Put in slightly more general form, the issue here is resource sharing, and the goal is to make all programs, data and equipment available to anyone on the network without regard to the physical location of the resource and the user. In other words, the mere fact that a user happens to be 1000 km away from his data should not prevent him from using the data as if they were local. Local sharing is another aspect of resource sharing. This goal may be summarized by saying that it is an attempt to end the "tyranny of geography." *(22)* 6

[3] A second goal is to provide high reliability by having alternative sources of supply. For example, all files could be replicated on two or three machines, so if one of them is ***(23) unavailable*** (due to hardware failure), the other copies could be used. In addition, the presence of multiple CPUs means that if one ***(24) goes down***, the others may be able to ***(25) take over*** its work, although at reduced performance. For military, banking, air traffic control, and many other applications, the ability to continue operating in the face of hardware problems is of great importance. 14

[4] Another goal is saving money. Small computers have a much better price/performance ratio than large ones. Mainframes are roughly a factor of ten faster than the fastest single chip microprocessors, but they cost a thousand times more. This ***(26) imbalance*** has caused many systems designers to build systems consisting of powerful personal computers, one per user, with data kept on one or more shared file server machines. *(27)*

[5] This goal ***(28) leads to*** networks with many computers located in the same building. Such a network *(29)*_____a LAN (local area network) to contrast with the far-flung WAN (wide area network), which is also called a long haul network. 24

[6] Yet another goal of ***(30) setting up*** a computer network has little to do with technology at all. A computer network can provide a powerful communication medium among widely separated people. Using a network, it is easy for two or more people *(31)*_____live far apart to write a report together. When one author makes a change to the document, which is kept online, the others can see the change immediately, instead of waiting several days for a letter. Such a speedup makes cooperation among far-flung groups of people easy where it previously had been impossible. In the long run, the use of networks to enhance human-to-human communication may prove more important than technical goals such as improved reliability. 31

[7] In Fig. 1-1 we give a classification of multiple processor systems arranged by physical size. At the top are data flow machines, highly parallel computers with many functional units all working on the same program. Next come the multiprocessors, systems that communicate via shared memory. Beyond the multiprocessors are the true networks, computers that communicate by exchanging messages. Finally, the connection of two or more networks is called interconnecting.

Interprocessor distance	Processors located in the same	Example
0.1 m	Circuit board	Data flow machine
1 m	System	Multiprocessor
10 m	Room	
100 m	Building	32)
1 km	Campus	
10 km	City	
100 km	Country	33)
1000 km	Continent	
10,000 km	Planet	34)

Fig. 1-1. Classification of interconnected processors by scale.

(FROM: ***Computer Networks*** by Andrews Tannenbaum. Prentice-Hall Pub. 2nd de. 1988, pp. 3-4)

22) According to paragraph 2, which is ***TRUE?***
Resource sharing...
a) means that people can have acess to a network by means of a special program.
b) means that the location of information and the user cannot be further away than 1000 km.
c) prevents a network from using special programs, data and equipment.
d) enables different users within a network to have access to information located in different places.

23) ***"unavailable"*** in the text means:
a) that it can not be used b) useful c) that it cannot be bought d) breakthrough

24) ***"goes down"*** in the text means:
a) decreases b) breaks down c) reduces the speed d) is switched off

25) ***"take over"*** in the text means:
a) substitute b) locate c) improve d) copy

26) ***"imbalance"*** in the text means:
a) equilibrium b) cost c) unequality d) speedup

27) According to ***paragraphs 3 and 4***, which is ***TRUE?***
a) A network automatically makes a second copy of all files within.
b) In case of hardware breakdown in a computer, a user can keep on working within a network because information may have been duplicated previously in a different machine.
c) One advantage of networks is that they reduce the numbers of CPUs to be used.
d) Networks save money because they use powerful mainframes.

28) ***"leads to"*** in the text can be substituted by:
a) is caused by b) carries out c) forms d) gives rise to

29) a) is named as b) is defined as c) is known d) is called

30) ***"setting up"*** in the text means:
a) having b) placing c) installing d) using

31) a) who b) which c) whose d) where

ACCORDING TO THE TEXT, FINISH THE FOLLOWING CLASSIFICATION:

32) a) WAN b) long haul network c) Interconnection of networks d) LAN

33) a) true network b) long haul network c) Interconnection of networks d) LAN

34) a) WAN b) long haul network c) Interconnection of WANs d) LAN

35) **How many purposes of using networks are mentioned in the text?**
a) 3: resource sharing, local sharing, saving money.
b) 4: resource sharing, high reliability, saving money, powerful communication for people living far away.
c) 1: they avoid the problem of geography.
d) 2: resource sharing and technology.

IV. Read the text and answer the following questions below.

NETWORK STRUCTURE

[1] It is now time to turn our attention from the social implications of networking to the technical issues involved in network design. In any network there exists a collection of machines intended for running user (i.e. application) programs. We will follow the terminology of one of the first major networks, the ARPANET, and call these machines *hosts*. The term *end system* is sometimes also used in the literature. The hosts are connected by the *communication subnet*, or just *subnet* for short. The function of the subnet is *(36)*____ carry messages from host to host, just as the telephone system carries words from speaker to listener. By separating the pure communication aspects of the network (the subnet) from the application aspects (the hosts), the complete network design is greatly simplified. 2

[2] In most wide area networks, the subnet consists *(37)*_____ two distinct components: transmission lines and switching elements. Transmission lines (also called *circuits, channels*, or *trunks*) move bits between machines.

[3] The switching elements are specialized computers used to connect two or more transmission lines. When data arrive on an incoming line, the switching element must choose an outgoing line to forward them on. Again following the original ARPANET terminology, we will call the switching elements *IMPs* (Interface Message Processors), although the terms *packet switch node*, *intermediate system*, and *data switching exchange* are also commonly used. Unfortunately, there is no consensus on terminology here; every writer on the subject seems to use a different name. The term "IMP" is probably as good as any. In this model, shown in Fig. 1-2, each host is connected to one (or occasionally several) IMPs. All traffic to or from the host goes via its IMP. *(38)* 15

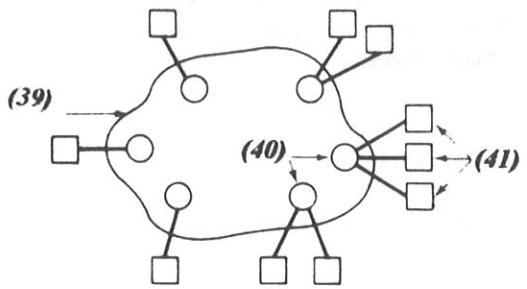


Fig. 1-2. Relation between hosts and the subnet.

Generally speaking, there are two types of designs for the communication subnet:

1. Point-to-point channels.
2. Broadcast channels.

[4] In the first one, the network ***(42) contains*** numerous cables or leased telephone lines, each one ***(43) connecting*** a pair of IMPs. If two IMPs that do not share a cable nevertheless wish to communicate, they must do this indirectly, via other IMPs. When a message (in the context of the subnet often called a *packet*) is sent from one IMP to another via one or more intermediate IMPs, the packet is received at each intermediate IMP in its entirety, stored there until the required output line is free, and then forwarded. A subnet using this principle is called a *point-to-point, store-and-forward*, or *packet-switched* subnet. Nearly all wide area networks have store-and-forward subnets. When a point-to-point subnet is used, an important design issue is what the IMP interconnection topology should look like. Figure 1-3 shows several topologies. Local networks that were designed as such usually have a symmetric topology. In contrast, wide area networks typically have irregular topologies. *(44)* 23

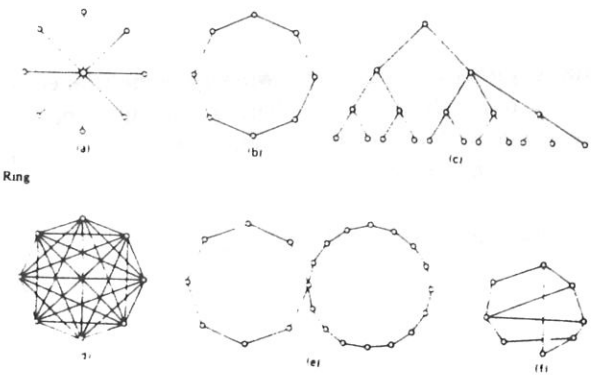


Fig. 1-3. Some possible topologies for a point-to-point subnet. a) Star. b) Ring. (c) Tree. (d) Complete. (e) Intersecting rings. (f) Irregular

[5] The second kind of communication architecture uses broadcasting. Most local area networks, and a small number of wide area networks are of this type. In a local area network, the IMP is reduced to a single chip embedded inside the host, so there is always one host per IMP, whereas in a wide area network there may be many hosts per IMP. Broadcast systems have a single communication channel that is shared by all the machines on the network. Packets sent by any machine are received by all the others. An address field within the packet specifies for *(45)* _____ it is intended. On receiving a packet, a machine checks the address field. If the packet is intended for some other machine, it is just ignored. Broadcast systems generally also allow the possibility of addressing a packet to all destinations by using a special code in the address field. When a packet with this code is transmitted, it is received and processed by every machine on the network. Some broadcast systems also support transmission to a subnet of the machines, something *(46)* _____ *multicasting.* *(47)* 35

[6] Figure 1-4 shows some of the possibilities for broadcast subnets. In a bus or cable network, at any instant one machine is the master and is allowed to transmit. All other machines are required to refrain from sending. An arbitration mechanism is needed to resolve conflicts when two or more machines want to transmit simultaneously. The arbitration mechanism may be centralized or distributed. 44

[7] A second possibility is a satellite or ground radio system. Each IMP has an antenna through which it can send and receive. All IMPs can hear the output from the satellite, and in some cases they can also hear the upwards transmissions of their fellow IMPs to the satellite as well.

[8] A third broadcast system is the ring. In a ring, each bit propagates around on its own, not waiting for the rest of the packet to which it belongs. Typically, each bit circumnavigates the entire ring in the time it takes to transmit a few bits, often before the complete packet has even been transmitted. Like all the other broadcast systems, some rule is needed for arbitrating simultaneous accesses to the ring.

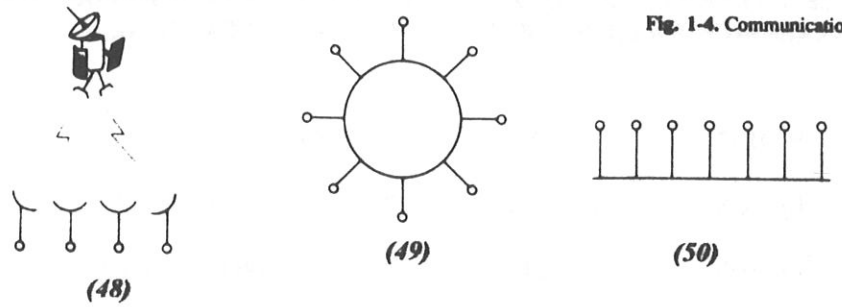


Fig. 1-4. Communication subnets using broadcasting.

(From: **Computer Networks** by Andrews Tannenbaum. Prentice Hall Pub. 2nd ed. 1988. pp. 6-9)

36) a) for b) to c) is used to d) such as

37) a) of b) in c) by d) into

38) According to **paragraphs 1, 2, 3**, which is ***TRUE?***
ARPANET...
a) is a kind of application program.
b) is a kind of terminology everybody uses when talking about networks.
c) is the name given to some IMPs.
d) is the name given to one of the most important networks existing, whose terminology has been widely used and accepted.

39) a) communication subnet b) end system c) IMP d) host

40) a) communication subnets b) end systems c) IMPs d) hosts

41) a) communication subnets b) packet switch node c) IMPs d) hosts

42) ***"contains"*** can be substituted by:
a) brings about b) results in c) is made up of d) is classified as

43) ***"connecting"*** can be substituted by:

a) which connects b) which is connected c) who connects d) that connect

44) According to **paragraph 4**, which is ***TRUE?***

Point-to-point channel subnets...

a) which are not linked can send a message directly from one IMP to another.

b) can send a message from one IMP to another provided they are linked by intermediate IMPs.

c) are also referred to as *packets.*

d) can only be used for local area networks.

45) a) who b) whose c) that d) whom

46) a) defining b) defined c) known as d) is named as

47) According to **paragraph 5**, which is ***TRUE?***

Broadcast subnets...

a) are made up of different communication channels within a network.

b) may have one or several hosts per IMP, depending on the kind of area network used.

c) can only send a packet to a specific destination detailed in the address field.

d) can only be used for local area networks because of the number of hosts needed.

ACCORDING TO THE EXPLANATION GIVEN IN THE LAST 3 PARAGRAPHS, DECIDE THE NAME OF THE COMMUNICATION SUBNETS USING BROADCASTING.

48) a) RING b) BUS c) GROUND RADIO SYSTEM d) CABLE

49) a) RING b) BUS c) SATELLITE SYSTEM d) CABLE

50) a) RING b) BUS c) SATELLITE SYSTEM d) GROUND RADIO SYSTEM

VOCABULARY

Part 1

3) reply: respuesta

Part 2

11) drum machine: batería (tambor) eléctrica
16) battle: batalla
17) approach: enfocar

Part 3 **NETWORK GOALS.**

Line 3 track: memoria
Line 4 management: dirección
Line 6 issue: cuestión
sharing: distribución (compartimiento)
Line 7 regard: tener en cuenta
Line 14 In addition: Además
Line 24 far-flung: extenso (remoto)
Line 31 In the long run: A la larga
Line 32 enhance: facilitar

Part 4 **NETWORK STRUCTURE.**

Line 2 issues involved: cuestiones involucradas
Line 4 hosts: huéspedes
Line 15 forward: enviar
Line 23 leased: contratadas, alquiladas
Line 35 embedded: colocado
Line 44 refrain from: detenerse

19) _____ the huge daily flood of data and the massive computing power required to process each image, most remote-sensing satellite data are stored in their raw form.

a) Because b) Since c) The reason why d) Because of

control resist

20) Remote-sensing data are being used not only for monitoring climate and agriculture and discovering natural resources, but also for _____ drugs from being imported, and for other special purposes. Which one is ***WRONG?***

a) preventing b) avoiding c) keeping d) stopping

21) If personnel _____ well-fitting clothes to protect themselves in that machinery room nothing _____.

a) had worn / would have happened
b) wore / would have happened
c) wears / could have happened
d) would wear / happened

22) Personnel working in machinery spaces should be given suitable ear defenders, which may be ear plugs or ear muffs, _____ the noise level is high.

a) unless b) otherwise c) in the event of d) provided

23) Centrifugal compression systems are usually combined with ***condensers which are cooled by means of water.*** Choose the right compound:

a) condensers-cooling water
b) water-cooled condensers
c) water-cooling condensers
d) condenser-cooled water

24) A pipe which is twenty feet long is a:

a) twenty-feet long pipe
b) twenty-foot long pipe
c) twenty feet-long pipe
d) twenty long-foot pipe

25) The engines reduced the speed, causing the vehicle to _____.

a) cut down b) come down c) speed down d) slow down

26) They had to _____ the gap between the two plates.

a) widen b) wide c) widthen d) width

III. Read the text carefully and choose the right option:

ELEMENTS OF A COMMUNICATION SYSTEM.

[1] Figure 1.1-2 depicts the elements of a communication system, omitting transducers but including unwanted combinations. There are three essential parts of any communication system, the transmitter, transmission channel, and receiver. Each part plays a particular role in a signal transmission, as follows.

[2] The transmitter processes the input signal to produce a transmitted signal suited to the characteristics of the transmission channel. Signal processing for transmission almost always involves modulation and may also include coding.

[3] The transmission channel is the electrical medium that bridges the distance from source to destination. It may be a pair of wires, a coaxial cable, or a radio wave or laser beam. Every channel introduces some amount of transmission loss or attenuation, so the signal power progressively decreases with increasing distance.

[4] The receiver operates on the output signal from the channel in preparation for delivery to the transducer at the destination. Receiver operations include amplification to compensate for transmission loss, and demodulation and decoding to reverse the signal-processing performed at the transmitter. Filtering is another important function at the receiver, for reasons discussed next. *(27)*

[5] Various unwanted undesirable effects crop up in the course of signal transmission. Attenuation is undesirable *(28) since* it reduces signal strength at the receiver. More serious, however, are distortion, interference, and noise, which appear as alterations of the signal shape. Although such contaminations may occur at any point, the standard convention is to blame them entirely on the channel, treating the transmitter and the receiver as being ideal. Figure 1.1-2 reflects this convention.

(29)

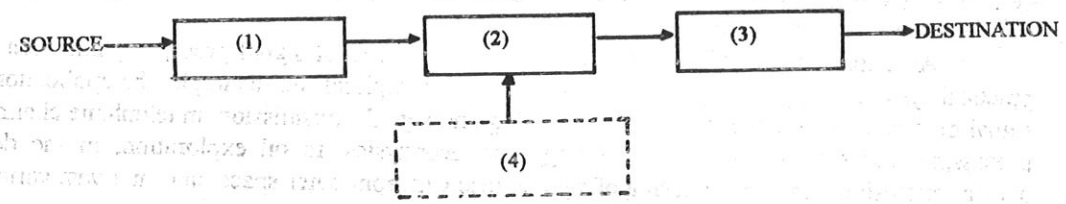


FIG. 1. 1-2 Elements of a Communication System.

[6] Distortion is waveform perturbation *(30) caused by* imperfect response of the system to the desired signal itself. *(31)*_____ noise and interference, distortion disappears when the signal is turned off. If the channel has a linear but distorting response, then distortion may be corrected, or at least reduced, with the help of special filters called equalizers. *(32)*

[7] Interference is contamination by extraneous signals from human sources—other transmitters, power lines and machinery, switching circuits, etc. Interference occurs most often in radio systems *(33)*_____ receiving antennas usually intercept several signals at the same time. Radio-frequency interference (RFI) also appears in cable systems if the transmission wires or receiver circuitry *(34) pick up* signals radiated from nearby sources. Appropriate filtering removes interference to the extent that the interfering signals occupy different frequency bands from those of the desired signal. *(35)*

[8] Noise refers to random and unpredictable electrical signals produced by natural processes both internal and external to the system. When such random variations are superimposed on *(36) a signal which bears information*, the message may be partially corrupted or totally obliterated. Filtering reduces noise contamination, but there inevitably remains some amount of noise that cannot be eliminated. This noise constitutes one of the fundamental system limitations. *(37)*

[9] Finally, it should be noted that Fig. 1.1-2 represents one-way or simplex (SX) transmission. Two-way communication of course requires a transmitter and receiver at each end. A full-duplex (FDX) system has a channel that *(38) allows* simultaneous transmission in both directions. A half-duplex (HDX) system allows transmission in either direction but not at the same time.

(From: Communication Systems. An Introduction to Signals and Noise in Electrical Communication by A. Bruce Carlson. Ed. McGraw Hill. Singapore, 1986. pp.3-4.)

IV. Read the following text carefully and answer the following questions.

ADVANTAGES OF DIGITAL OVER ANALOG SIGNAL PROCESSING.

[1] There are many reasons *(39)*_____ digital signal processing of an analog signal may be preferably to processing the signal directly in the analog domain, as mentioned briefly earlier. First, a digital programmable system allows flexibility in reconfiguring the digital signal processing operations simply by changing the program. Reconfiguration of an analog system usually implies a redesign of the hardware, testing, and verification that it operates properly.

[2] Accuracy considerations also play an important role *(40)*_____ the form of the signal processor. Digital signal processing provides better control of accuracy requirements. Tolerances in analog circuit components make it extremely difficult for the designer to control the accuracy of an analog signal processing system. On the other hand, a digital system provides much better control of accuracy requirements. Such requirements, in turn, *(41) result in* specifying the accuracy requirements in the A/D converter and the digital signal processor, in terms of word length, floating-point versus fixed-point arithmetic, and similar factors. *(42)*

[3] Digital signals are easily stored on magnetic media (tape or disk) without deterioration or loss of signal fidelity beyond that introduced in the A/D conversion. *(43)As a consequence*, the signals become transportable and can be processed off-line in a remote laboratory. The digital signal processing method also allows for the implementation of more sophisticated signal processing algorithms. It is usually very difficult to perform precise mathematical operations on signals in analog form. However, these operations can be routinely implemented on a digital computer by means of software.

[4] In some cases a digital implementation of the signal processing system is cheaper than its analog counterpart. The lower cost may be *(44)*_____ the digital hardware is cheaper, or perhaps it is a result of the flexibility for modifications *(45) provided* by the digital implementation. *(46)*

[5] As a consequence of the advantages cited above, digital signal processing has been applied in practical systems *(47)*_____ a broad range of disciplines. For example, the application of digital signal processing techniques in speech processing and signal transmission on telephone channels, image processing and transmission, in seismology and geophysics, in oil exploration, in the detection of nuclear explosions, in the processing of signals received from outer space, and in a vast variety of other applications.

[6] As already indicated, however, digital implementation has its limitations. One practical limitation is the speed of operation of A/D converters and digital signal processing. Signals having extremely wide bandwidths require *(48) A/D converters whose sampling rates are fast* and fast digital signal processors. Hence, there are analog signals with large bandwidths for *(49)*_____ a digital processing approach is beyond the state of the art of digital hardware. *(50)*

(FROM: *Digital Signal Processing. Principles, Algorithms and Applications* by John C. Proakis and Dimitris G. Manolakis. MacMillan Publishing Co., New York, 1992, pp 5-6.)

39) a) for b) because of c) why d) for that

40) a) in determining b) when determine c) so that d) for determine

41) "***result in***" can be substituted in the text by:
a) cause b) result from c) lead to d) are known as

42) Which of these is ***TRUE***, according to **paragraphs 1 & 2**?
a) If an analog system had to be reconfigured, changing the program would be useful.
b) Controlling accuracy in an analog signal processing system is very difficult due to tolerances in the components of analog circuits.
c) A/D converters require a better control of accuracy provided they use a digital signal processor.
d) The use of digital signal processing prevents from controlling accuracy.

27) Which is ***FALSE***, according to **the first four paragraphs?**

a) The function of a transmitter is to modulate and codify an input signal.

b) A transmission channel performs the function of attenuating a signal between the source and the destination.

c) The receiver in a communication system can carry out four main functions: amplification, demodulation, decoding and filtering.

d) During signal transmission a signal can be altered and affected by attenuation, distortion, interference or noise.

28) "***since***" in this context means:

a) from b) as c) so that d) ago

29) Choose the right element ***to complete Figure 1.1-2:***

a) (1) input signal (2) noise, interference, distortion (3) receiver (4) transmission channel

b) (1) transducer (2) modulation (3) attenuation (4) demodulation

c) (1) transmitter (2) transmission channel (3) receiver (4) noise, interference, distortion

d) (1) transmitter (2) transducers (3) transmitted signal (4) transmission channel

30) "***caused by***" can be substituted by:

a) resulting from b) resulting in c) producing by d) led to

31) a) Alike b) Likely c) Unlikely d) Unlike

32) According to **paragraph 6**, which is ***FALSE***?

a) An imperfect response of the communication system to the desired signal can give rise to a distorted signal.

b) Distortion can disappear as long as the signal is turned off.

c) Distortion may be corrected or reduced provided there are equalizers.

d) Special filters, such as equalizers, may help to correct the channel.

33) a) which b) whose c) that d) whom

34) "***pick up***" in this context is a synonym of:

a) choose b) lift c) receive d) take

35) According to **paragraph 7**, which is ***TRUE***?

a) Interference usually takes place in transmitters, power lines, machinery and switching circuits.

b) The reception of several signals at the same time causes interference in cable antennas.

c) Appropriate filtering prevents interference from nearby signals in radio and cable systems.

d) The problem with filtering is that it makes interfering signals change their frequency band

36) "***a signal which bears information***" is:

a) an information-bearing signal c) a signal information bear

b) a signal-bearing information d) an information-borne signal

37) According to **paragraph 8**, which is ***TRUE***?

Noise.....

a) is an undesired electrical signal which occurs within the system.

b) causes information to be superimposed on a corrupted signal.

c) can be eliminated by using filters in the system.

d) contamination can be partially reduced with filters.

38) "***allows***" is **the opposite of:**

a) lets b) keeps c) forces d) avoids

43) "***As a consequence***" does not mean the same as:

a) Therefore b) Nevertheless c) Thus d) Hence

44) a) due to b) owing to c) because of d) due to the fact that

45) "***provided***" in this context means:

a) as long as b) supplied c) changed d) unless

46) Which of these is ***FALSE***, according to **paragraphs 3 & 4?**

a) Digital signals suffer no deterioration or signal fidelity losses after being stored.

b) Digital signals make it possible to carry out complex signal processing algorithms.

c) The main advantage of digital signal processing is that it always reduces the cost of its implementation.

d) The reason why digital signal processing has a lower cost than analog signal processing is because of the cost of the hardware and its flexibility for modifications.

47) a) covering b) covered c) which covers d) that are covered

48) "***A/D converters whose sampling rates are fast***" are:

a) fast rates sampling-converters A/D

b) A/D converters fast-sampling rates

c) fast-sampling-rate A/D converters

d) fast-sampled rate A/D converters

49) a) that b) which c) whom d) whose

50) Which of these is ***FALSE***, according to **paragraphs 5 & 6?**

a) Digital signal processing techniques are used for the processing of different signals in a broad variety of applications.

b) The slow operation of A/D converters and digital signal processors is one of the disadvantages of digital implementation.

c) A fast A7D converter and a fast digital signal processor must be used as long as the signal has a wide bandwidth.

d) An analog signal, whose bandwidth is very large, can be processed digitally.

VOCABULARY:

PART I.

2) *diseases:* enfermedades
3) *removal:* eliminación
8) *shortages*: recortes
well: pozos
pipes: tuberías

PART II.

9) *unmanned*: sin mano de obra humana (automatizados)
guard: guardia
12) *outline:* perfil
13) *bulk:* pesado
16) *Stainless:* inoxidable
17) *affordable:* asequibles
19) *raw:* básica, no tratada
21) *well-fitting*: adecuadas
22) *ear plugs & ear muffs*: orejeras
26) *gap:* espacio

PART III. Elements of a Communication System.

Line 6 *involve:* implicar
Line 12 *delivery:* envío
Line 16 *crop up:* acumularse
Line 19 *blame:* culpar
Line 30 *to the extent that:* hasta el punto de que
Line 31 *random:* aleatorio
Line 33 *obliterate:* borrar, eliminar

PART IV. Advantages of Digital over Analog Signal Processing.

Line 6 *accuracy:* precisión
Line 10 *in turn:* a su vez
Line 11 *in terms of:* en función de
Line 24 *range:* gama
Line 25 *speech:* voz

ESCOLA UNIVERSITÀRIA POLITÈCNICA DE VILANOVA I LA GELTRÚ (UPC)

Examen: **Anglès II (Telecomunicacions)**
Codi de la prova: **340-73699-00-0-00**
Curs: **1998-99**
Convocatòria: **febrer 1999**
Puntuació: 35 respostes encertades d'un total de **50** per aprovar. Les incorrectes no descompten.

I.-Choose the right answer. Only one is correct

1.-Superconductors have no presence in the large commercial markets for motors, generators, power transmission lines, and many other systems _____copper or aluminium wires still reign supreme.

a) in that b) which c) ∅ d) where

2.-Closing the switch_____current to flow easily.

a) prevents b) keep c) cause d) enables

3.- All students ***shall*** take a broad range of subjects before specialising.
"shall" can be substituted by:

a) are recommended to c) are required to
b) can choose to d) will possibly

4.-Within just a few years, two critical technologies have become available: powerful graphics workstations for displaying data and inexpensive commercial software for manipulating them. _____, satellite data are in wider use than before.

a) As a result of, ... b) Since c) Consequently, ... d) This is because

5.- Secondary batteries are constructed _____ they can be discharged and recharged to approximately their original state.

a) so as TO b) in order to + V. INFINITIVE SO AS TO c) so that - V. ING FOR + V. ING d) so to

6.- The charging process of a battery is the reverse of the discharge process; _____, the electrode reactions must be reversible.

a) as | SINCE | BECAUSE b) as a result c) as a result of d) since

7.- The lead-acid battery is commonly _____ provide electricity for emergency lighting and communication circuits.

a) responsible for b) used for c) used to d) serve to

8.-If you _____to what I said, you _____so many problems with the experiment.

a) listened/would not had c) would listen/ did not have
b) had listened/would not have had d) listened/would not have had

9.-In one of his experiments, Volta classified different materials _____ their "electromotive force", or reactivity.

a) into b) belonging to c) according to d) basis of

ON THE

10.-***My salary must be increased, otherwise I'll look for another job.***

This sentence **DOES NOT MEAN THE SAME AS...**

a) I'll look for another job unless my salary is increased.
b) If my salary is not increased, I'll look for another job.
c) I won't look for another job as long as my salary is increased.
d) Provided that my salary is increased, I'll look for another job.

11.-The received pulse is displayed on a chart by a pen recorder so that the navigator can see the outline of the sea bottom…

Which one is **WRONG**?

a) …over which the ship is passing
b) …which the ship is passing over
c)…over that the ship is passing
d)…the ship is passing over

12.-Currently researchers are developing ***machines which are based on computers and are used to diagnose illness.***

BASED

The phrase in **bold type** can be substituted by the following compound.

a) illness-diagnosing computer-based machines
b) diagnosing-illness computers-based machines
c) illness-diagnosed computer-based machines
d) diagnosed-illness computers-based machines

13.-The ions ***carrying*** electrical charges can be detected now.

a) which are carried b) that carries c) which carry d) who carry

14.-Under certain conditions, semiconductors _____ easily but in others they behave as insulators.

a) allow that a current flows
b) allow to flow a current
c) allow a current to flow
d) allow a current flowing

15.-The invention of the telephone ***led to*** a revolution in the world of communications.

"***led to***" is *not a synonym* of:

a) brought about
b) gave rise to.
c) prevented from
d) resulted in.

16.-The materials _____ properties damage human skin is going to be eliminated from our products.

a) which b) that c) in which d) whose

17.-Electronic circuits can be ***broken down*** into two categories: signal-processing circuits and signal generating circuits.

*The meaning of **broken down** in this context is:*

a) damaged b) destroyed c) divided d) controlled

18.-You are not allowed to take this exam _____ you show me your identity card.

a) if b) unless (if...not) c) provided d) in case

19.- _____the huge daily flood of data and the massive computing power required to process each image, most remote-sensing satellite data are stored in their raw form.

a) Since b) The reason why c) Due to (+noun +Gerund) d) Because

20.-These rules are intended to _____.

a) prevent accidents from happening c) avoid accidents from happening

b) prevent accidents happening d) avoid accidents happening

21.-They had to _____the gap between the two plates.

a) wide b) width c) widen d) widely

22.- The development of the integrated circuit was a major_____ in the history of computing.

a) breakout b) breakdown c) breakthrough d) break-in

23.-When I get my_____in Chemical Engineering , I will try to find a good job in a big company.

a) license b) career c) title d) degree

24.-"***Materials which are highly resistant to corrosion***" are:

a) highly-resistant corrosion materials

b) ~~materials highly-resistant-corrosion~~

c) highly corrosion-resistant materials

d) corrosion highly-resistant materials

PART II. Read the following text carefully and answer the questions below

EARLY HISTORY OF MICROWAVES

The history of microwaves is embodied in the evolution of electromagnetic waves. One of the earliest talks on this subject was Michael Faraday's (1791-1867) impromptu presentation to the Friday Night Lectures of the Royal Society of London in 1846 entitled "Thoughts on Ray Vibrations." [Faraday's talk was given *(25)*_____ Charles Wheatstone (1802-1875) was afraid to give his scheduled presentation entitled "Electromagnetic Chronoscope" before this prestigious audience.] Faraday's idea included the propagation of magnetic disturbances *(26)*_____ transverse vibrations. Later James Clerk Maxwell (1831-1879) credited this idea for helping him determine the electromagnetic theory of light.

Maxwell was primarily a mathematician and began to translate Faraday's experimentally generated ideas into mathematical relations (1864). The resulting four relations express the fundamental laws for the electromagnetic spectrum. These relations along with Newton's laws, the three laws of thermodynamics, the quantum theory, and the theories of relativity *(27)*_____ the basis for our current understanding of the physical universe. The Maxwell relations appear to be quite fundamental in that *(28) they* are not modified by relativity as Newton's relations are when particle velocities approach the speed of light.

Heinrich Rudolf Hertz (1857-1894) confirmed Maxwell's predictions via experiments conducted between 1886 and 1888. Hertz used an oscillating electric spark near 10 cm wavelength to induce similar oscillations in a distant wire loop. Although this was the first microwave-like experiment, the first developments in the microwave region of the spectrum were carried out by Guglielmo Marconi (1874-1937) in the 20th century. Marconi built parabolic antennas to demonstrate wireless telegraphic communications via Hertzian waves up to 550 Mhz (5.5×10^8 Hz). Marconi is considered the first "microwave engineer" because of these trendsetting experiments *(29)*_____ the use of ever higher frequencies.

More detailed development of the microwave technology involving waveguides (hollow conductors for propagation of microwave frequencies above cutoff frequencies determined by dimensions and dielectric properties) was done by George C. Southworth in 1930. In preliminary experiments he also observed standing waves (1920) that proved to be functions of the dimensions of the experimental apparatus. In 1933 Southworth and his colleagues at AT & T sent and received telegraph messages over 6 m of enclosed transmission line (waveguide).

The next major advance in microwave technology was the development of a continuous wave source called the klystron in 1937. This microwave vacuum tube was invented at Stanford by Russell and Sigurd Varian and William Hansen. This invention was helped by the financial support from the Sperry Gyroscope Company and its desire to develop an instrument landing system for aircraft during poor weather conditions. Concurrently, companies (AT & T, ITT, Marconi) were supporting microwave development primarily for use in communications.

Based on these developments before World War II, radio detection and ranging (radar) motivated an immense increase in microwave developments. Most of the microwave devices used today had their early development during WWII in the British and U.S. war laboratories. These developments are well documented in a 28 volume set written by members of the MIT Radiation Laboratory.

25.- a) because b) because of c) due to d) owing to

26.- a) by with b) by use c) by means of d) with using

27.- Which of the following options is **WRONG**?

a) make up b) consist of c) constitute d)form

28.- they (line 14) refers to:

a) Maxwell's relations c)Newton's relations

b) the theories of relativity d)the laws of thermodynamics

29.- a) demonstrated b) which were demonstrated c) demonstrating d) who demonstrated

30.- Which of the following statements is **TRUE** according to the **first paragraph**?

a) Michael Faraday gave a lecture entitled "Electromagnetic Chronoscope", in which he talked about the propagation of magnetic disturbances.

b) Michael Faraday and James Clerk Maxwell worked together to develop the electromagnetic theory of light.

c) Wheatstone read Faraday's presentation, "Thoughts on Ray Vibrations", because Faraday was afraid to speak before such a prestigious audience.

d) Faraday's theory about electromagnetic waves served as the basis for Maxwell's later work.

31.- Complete the following statement (**2nd paragraph**):

Maxwell's relations about the electromagnetic spectrum are considered to be fundamental because...

a) they are based on the laws of thermodynamics, the quantum theory and the theory of relativity.

b) they resulted from Faraday's experimentally generated ideas.

c) they are not modified by relativity when the speed of particles is near the speed of light.

d) he was a mathematician who had worked with Faraday.

PERFORM

32.- Which of the following statements is **TRUE** according to the **3rd paragraph**?

a) Marconi carried out a series of experiments which proved Maxwell's predictions.

b) Maxwell's electromagnetic theory of light was confirmed by Hertz's experiments.

c) Hertz is known as the first "microwave engineer" because he conducted the first microwave-like experiment.

d) Maxwell carried out a series of experiments using Hertzian waves.

33.- Which of the following statements is **FALSE** according to **paragraphs 4** and **5**?

a) Southworth, who worked at AT&T, was involved in the study of standing waves and waveguides.

b) The klystron is a type of vacuum tube that emits continuous waves.

c) The invention of the klystron was a major advance in microwave technology, although it did not receive any financial support.

d) Several companies like AT &T, ITT and Marconi were interested in using microwave technology for communication purposes.

34.- Complete the following statement (**para. 6**):

The developments in microwave technology carried out before World War II are significant because...

a) they are well documented in a volume set written by members of the MIT Radiation Laboratory.

b) they set the basis for the development of radar, which encouraged further microwave developments.

c) they were done in war laboratories in several countries, mainly in Britain and the U.S.

d) they allowed engineers to develop radar, which is the most important microwave device used today.

Part III. Read this text and answer the questions that follow.

The most important applications of microwaves are in communications and radar. In the communications application, radio relay systems for telephone and television are the largest markets, with Earth-space (satellite) communications growing rapidly. Numerous special communications applications ***(35) like*** point-to-point communications have replaced the use of telephone lines in metropolitan regions ***(36)***_____ the lines are very expensive to install. Within a few years, direct broadcast satellites will open an immensely competitive microwave market unknown until now. [5]

Radar provided the major incentive for the development of microwave technology ***(37)***_____ only this region of the spectrum could provide the required resolution with antennas of reasonable size. [10]

A relatively recent application of microwave technology has been electronic warfare. As the name implies, this is a military application of microwaves ***(38)***_____ specialized broadband receivers and high-power jamming transmitters. The receivers are used to monitor the enemy's transmissions passively, primarily for intelligence purposes. The jammer transmitters ***(39)***_____ confuse and deceive the enemy's received signals, ***(40) thus*** making their systems less effective. [15]

The most familiar consumer application of microwaves is the microwave oven. This application uses a minimum of sophisticated microwave circuitry but has revolutionized the technique ***(41)***_____ foods and other products without convectively heating their entire surroundings. [20]

Microwaves have also flourished in basic research and science applications. Atomic clocks use microwave resonance interactions with either ammonia or cesium molecules to ***(42) provide*** extremely stable oscillating frequencies. In a similar application, the fine structure of the hydrogen atom ***(43) known as*** the Lamb shift was discovered with microwaves at 1420 MHz. This line has been observed in stellar radiation with masers ***(44)*** (***amplifiers of microwaves with a low level of noise***) by radio astronomers. Finally, microwave spectroscopy is used to study the structure of numerous molecules and crystals. ***(45)*** [25]

(from: Wolff, Eduard A. *Microwave Engineering and Systems Applications.* Wiley and Sons, 1988, 1-4)

35.- "like" can be substituted by:
a) such as b) as c) example d) e.g.

36.- a) which b) where c) whose d) whom

37.- a) as b) due to c) the reason why d) because of

38.- a) whom involves b) who involves c) involved d) involving

39.- a) perform the function of b) are used for c) serve to d) function to

40.- "thus" can be substituted by:
a) however b) despite c) hence d) although

41.- a) in order for heating b) for to heat c) so to heat d) for heating

42.- "provide" is a synonym of:
a) emit b) suppress c) supply d) detect

43.- "known as" can be substituted by:
a) called as b) referred as c) named d) defined

DESCRIBED

44.- "***amplifiers of microwaves with a low level of noise***" can be substituted by:

a) microwaves low-noise amplifiers
b) low-noise microwave amplifiers
c) amplifiers microwaves low-level noise
d) low-noise amplifier microwaves

45.- *Choose the best title for this text:*

a) Applications of microwaves
b) Advantages of microwaves
c) Microwave technology
d) Types of microwaves

Complete the following classification according to the information given in the text:

	APPLICATIONS	DEVICES (or types)
MICROWAVES	Communication	radio relay systems
		Earth-space communications
		(46)
	Radar	antennas
	(47)	broadband receivers
		high-power jamming transmitters
	(48)	microwave oven
	(49)	atomic clocks
		(50)

46.- a) telephone lines
b) radio
c) satellites
d) point-to-point communications

47.- a) intelligence
b) military
c) signal transmission
d) simulation warfare

48.- a) familiar
b) sophisticated circuitry
c) consumer
d) convective heating

49.- a) molecular structure
b) research and scientific
c) resonance interactions
d) radio astronomy

50.- a) resonance interactions
b) Lamb shift
c) oscillators
d) microwave spectroscopy

VOCABULARY

PART II. TEXT "EARLY HISTORY OF MICROWAVES"

l.1 embodied: inclòs
l.4 scheduled: programada
l.6 disturbances: perturbacions
l.7 credited: va reconéixer
l. 11 along with: així com
l.14 in that: en el sentit que
l.17. spark: espurna
l.18 wire loop: llaç, circuit tancat
l.22 trendsetting: que van marcar la pauta
l.24 hollow: buit
l.25 cutoff: limit, final
l.34 concurrently: al mateix temps

PART III. TEXT

line 13 broadband: banda ampla
line 14 jammer: emissor pertorbador

ESCOLA UNIVERSITÀRIA POLITÈCNICA DE VILANOVA I LA GELTRÚ. **(UPC)**

Examen: 1
Assignatura: ANGLÈS 2 (Telecomunicacions)
Curs: Juny 1997-98
Codi de la prova: 340-73498-00-0-00
Puntuació: 35 respostes encertades d'un total de 50 per aprovar. Les incorrectes no descompten.

PART 1. Choose one of the following options. Only ONE is correct.

1) If I _____ a Mechanical Engineer, I would be able to work in my father's company. Unfortunately, I preferred to study Chemistry.
   a) were b) was c) would be d) would have been

2) The alarm will work_____ you disconnect the mains supply.
   a) in case of b) provided c) unless d) otherwise

3) When he gets his_____ in Electronics Engineering, he will have to find a job.
   a) title b) career c) licence d) degree

4) Transmission involves not a single-frequency electromagnetic wave but a frequency band_____ width is proportional to the information density.
   a) that b) which c) whose d) whom

5) *My salary must be increased, otherwise I'll look for another job.*
   The above sentence **DOES NOT MEAN THE SAME AS....**
   a) I'll look for another job unless my salary is increased.
   b) If my salary is not increased, I'll look for another job.
   c) I won't look for another job as long as my salary is increased.
   d) Provided that my salary is increased, I'll look for another job.

6) *Machines that are controlled by computers* are:
   a) Machine-controlled computers c) Controlled-computer machines
   b) Controlled-machines computers d) Computer-controlled machines

7) If you _____ to what I said, you _____ so many problems with the experiment.
   a) listened / would not had c) had listened / would not had
   b) had listened / would not have had d) listened / would not have had

8) a) Diodes enable that electricity flows in one direction, but they prevent that it flows in the other.

b) Diodes enable electricity flowing in one direction, but they prevent it to flow in the other.

c) Diodes enable electricity to flow in one direction, but they prevent it from flowing in the other.

d) Diodes enable electricity flow in one direction, but they prevent it flow in the other.

9) Engineering materials are classified _____ their properties.

a) into b) belonging to c) according to d) basis of

10) The invention of the microprocessor ***led to*** a revolution in the world of computers.
"***led to***" **IS NOT** a synonym of:

a) gave rise to b) resulted from c) brought about d) caused

11) The invention of the voltaic cell was a major _____ in the development of electrochemistry.

a) break-in b) breakthrough c) break-out d) breakdown

12) Conversion tables are necessary _____ the USA and Britain still retain a measurement system which is different from that used by the rest of the world.

a) because of b) since c) due to d) on account of

13) They ***discovered*** a new way of transmitting information much more quickly that revolutionized the world of communications.
The verb in **bold type** has a synonym in:

a) looked for b) looked into c) found out d) turned out

14) In 1936 the BBC used an electronic scanning system_____ iconoscope.

a) is called b) refers to c) known as d) naming

PART II. Read the following text and answer the questions below.

HISTORY OF ELECTRONICS

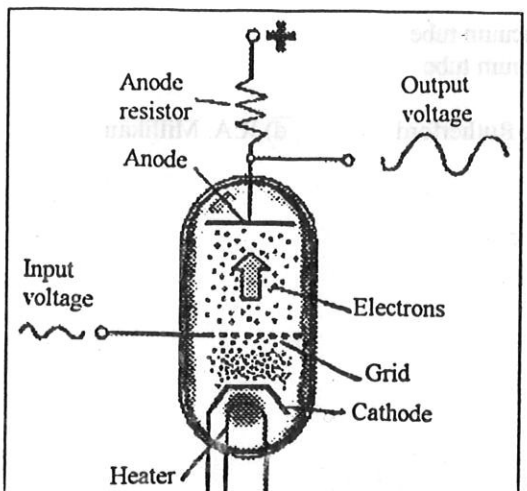
Theoretical and experimental studies of electricity during the 18th and 19th century led to the development of the first electrical machines and the beginning of the widespread use of electricity. The history of electronics began to evolve separately from that of electricity late in the 19th century with the identification of the electron (using a cathode ray tube) by the English physicist Joseph John Thomson in 1897 and the measurement of its electric charge by the American physicist Robert A. Millikan in 1909.

At the time of Thomson's work, the American inventor Thomas A. Edison had observed a bluish glow in some of his early light bulbs (discovered in 1878) under certain conditions, and found that a current would flow from one electrode in the lamp to another if the second one (anode) were positively charged with respect to the first (cathode). ***(16) Thus***, while working on the light bulb, Edison made his only real scientific discovery, the principle of the *vacuum tube*. At the time, however, there seemed to be no use for ***(17) its*** properties. Work by Thomson and his student (Ernest Rutherford) and by the English engineer John Ambrose Fleming revealed that his so-called Edison effect was the result of the emission of electrons from the cathode, the hot filament in the lamp. The motion of the electrons to the anode, a metal plate, constituted an electric current that would not exist if the anode ***(18)***_____ negatively charged. ***(19)***

The discovery provided impetus for the development of electron tubes and the use of Fleming's thermionic valve (a two-electrode vacuum tube) in radio receivers. The detection of a radio signal, which is ***(20) a very high-frequency alternating current***, requires that the signal be rectified ***(21)*** (***i.e.*** the alternating current must be converted into a direct current by a device that conducts only when the signal has one polarity but not when it has the other). This is precisely what Fleming's valve (patented in 1904) was able to do. Previously, radio signals had been detected by various empirically developed devices such as the "cat whisker" detector, which was ***(22) composed of*** a fine wire (the whisker) in delicate contact with the surface of a natural crystal of lead sulfide (galena) or other semiconductor material. These devices were undependable, lacked sufficient sensitivity, and required constant adjustment of the whisker-to-crystal contact to produce the desired result. Yet, these were the forerunners of today's solid-state devices. The fact that crystal rectifiers worked at all encouraged scientists to continue studying ***(23) them*** and gradually to obtain the fundamental understanding of the electrical properties of semiconducting materials necessary to allow the invention of the transistor.

In 1906 Lee DeForest, an American engineer, developed a type of vacuum tube that was capable of amplifying radio signals. DeForest added a grid of fine wire between the cathode and the anode of the two-electrode thermionic valve constructed by Fleming. The new device, which DeForest named the Audion, was thus a three-electrode vacuum tube. In operation the anode in such a vacuum tube is given a positive potential (positively biased) with respect to the cathode, while the grid is negatively biased. A large negative bias on the grid prevents any electrons emitted from the cathode from reaching the anode; however, because the grid is largely open space, it permits some electrons to pass through it and reach the anode at a less negative bias. Small variations in the grid potential can thus control large amounts of anode current.

(source: ***Encyclopaedia Britannica, 212-213)***



15) According to the descriptions given in the text, the following diagram corresponds to:
   a) a light bulb
   b) a thermionic valve
   c) an Audion
   d) a cathode ray tube

16) "*Thus*" can be substituted by:

a) However b) Although c) Therefore d) Due to

17) "*its*" refers to:

a) light bulb b) vacuum tube c) Edison d) principle

18) a) was b) would have been c) were d) will be

19) According to paragraph 2, ***the Edison effect is...***

a) a phenomenon that made it possible for Edison to discover light bulbs.
b) the electron flow from the negatively charged cathode to the positively charged anode.
c) a phenomenon that Thomson, Rutherford and Fleming discovered jointly.
d) the name given to the vacuum tubes that Edison invented and used.

20) "***a very high-frequency alternating current***" is:

a) an alternating current with very high frequency
b) current that alternates between high and low frequency
c) high current that alternates its frequency
d) high frequency for alternating current

21) "*i.e.*" means:

a) for example b) such as c) namely d) like

22) "***composed of***" can be substituted by:

a) made up of b) consisted in c) made of d) divided into

23) "***them***" refers to:

a) solid-state devices c) scientists
b) electrical properties d) crystal rectifiers

ACCORDING TO THE INFORMATION GIVEN IN THE TEXT, COMPLETE THE TABLE:

24) a) electricity b) electronics c) electron d) electric charge

25) a) J.A. Fleming b) J.J. Thomson c) T.A. Edison d) E. Rutherford

26) a) the principle of the vacuum tube c) a lamp with two anodes
b) a lamp with two cathodes d) light bulb without filament

27) a) Audion b) thermionic valve c) electron tubes d) cat whisker

28) a) Audion b) thermionic valve c) vacuum tube d) grid

29) a) Audion c) a three-electrode vacuum tube
b) thermionic valve d) a two-electrode vacuum tube

30) a) J.J. Thomson b) L. DeForest c) E. Rutherford d) R.A. Millikan

YEAR	SCIENTIST / ENGINEER	DISCOVERY	DESCRIPTION	USED...
1897	J. J. Thomson	*(24)*		
1878	*(25)*	Edison effect (in light bulbs)	*(26)*	had no use
1904	J. A. Fleming	*(27)*	a two-electrode vacuum tube	in radio receivers
1906	L. DeForest	*(28)*	*(29)*	to amplify radio signals
1909	*(30)*	measurement of the electron electric charge		

VOCABULARY

PART I.

PART II. HISTORY OF ELECTRONICS.

Line 2 widespread: amplio, extensivo
line 8 bluish: azulado
line 8 light bulbs: bombillas
line 13 so-called: denominado
line 23 cat-whisker: alambre fino de contacto
line 26 lack: faltar, carecer de
line 27 forerunners: precursores
line 32 grid: rejilla

- **PART III. Text: MODULATION**

line 9 sideband: banda lateral
line 11 erect sideband: banda lateral directa
line 12 inverted sideband: banda lateral invertida
line 15 envelope demodulator: demodulador de envolvente
line 17 conveys: llevar, transmitir
line 18 fading: debilitamiento de la intensidad
line 29 Moreover: Además
line 30 incoming: de entrada

III. Read the following text carefully and choose the right option.

MODULATION.

The processing of a signal to make it suitable for sending over a transmission medium is called modulation. There are several reasons for using modulation, ***(31)***_____ them are:

a) Frequency translating (e.g. when an ***(32) audio-frequency baseband signal*** modulates a radio-frequency carrier).

b) Improving signal/noise ratio by increasing the bandwidth (e.g. using frequency modulation).

c) Multiplexing.

The simplest form of modulation is amplitude modulation (a.m.) of a sinusoidal carrier. If the modulating signal ***(33) consists of*** a band of frequencies, the modulated signal consists of two sidebands, each ***(34) occupying*** the same bandwidth as the baseband signal. In the upper sideband, the highest frequency corresponds to the highest frequency in the baseband; this is therefore known as an erect sideband. In the lower sideband, the highest frequency corresponds to the lowest frequency in the baseband; this is known as an inverted sideband. Simple amplitude modulation makes inefficient use of the transmitted power, as information is transmitted only by the sidebands but the majority of the power is contained in the carrier. However, a.m. permits the use of a relatively simple receiver using an envelope demodulator. Therefore, it is used for services, such as broadcasting and mobile radio, where this is an important advantage. ***(40)***

In frequency modulation (f.m.) the amplitude of the signal conveys no information. ***(41) Thus***, amplitude variations ***(42)***_____ fading have no effect on the output signal level. Amplitude variations ***(43) caused by*** noise also have no effect.

Because of ***(44) its*** good signal/noise ratio properties, f.m. is used ***(45)***_____ radio circuits when sufficient bandwidth can be provided. This is not possible for telephony in the more congested parts of the radio-frequency spectrum (very high frequency--v.h.f.--and lower frequencies), but it is standard practice at ultra high frequency (u.h.f.) and super high frequency (s.h.f.). For telegraph signals, ***(46)***_____ their narrow baseband, it is possible to use f.m. in the high frequency band. ***(47)***

In phase modulation (p.m.), the frequency deviation (βf_m) is proportional to the frequency of the modulating signal as well as its amplitude. Consequently, for signals (such as speech) that have the major proportion of their energy at the lower end of the baseband, p. m. makes inefficient use of the transmission-path bandwidth in comparison with f.m.. Moreover, to demodulate a p.m. signal, the receiver must compare the phase of the incoming carrier with ***(48) the one*** of a ***(49) waveform of reference which is generated locally*** which must be extremely stable. Therefore, f.m. is preferred to p.m. for the transmission of analogue signals. ***(50)***

31) a) between b) into c) among d) in

BANDA BASE

32) "***audio-frequency baseband signal***" means:

a) the frequency of an audio signal with baseband
b) the signal of frequency of audio in the baseband
c) the audio signal for the baseband of frequencies
d) the signal of baseband of audio frequencies

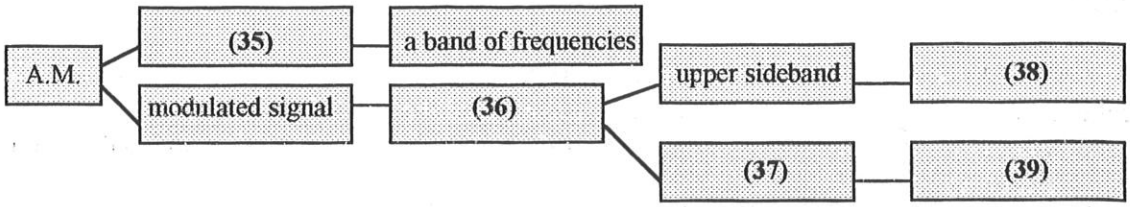
33) "***consists of***" can be substituted in the text by:

a) is made of b) are composed of c) is made up of d) leads to

34) "***occupying***" can be substituted in the text by:

a) which occupies b) who occupies c) that is occupied d) occupied

COMPLETE THE FOLLOWING DIAGRAM ACCORDING TO INFORMATION IN THE 2nd PARAGRAPH:



35) a) sinusoidal carrier b) sideband c) modulating signal d) modulation

36) a) one sideband b) two sidebands c) highest frequency d) erect sideband

37) a) erect sideband b) baseband c) lower sideband d) inverted sideband

38) a) erect sideband b) baseband c) lower sideband d) inverted sideband

39) a) erect sideband b) baseband c) lower sideband d) inverted sideband

40) According to paragraph 2 on amplitude modulation, which is **TRUE**?
a) The main advantage of amplitude modulation is that it uses all the transmitted power.
b) The main advantage of a.m. is that it allows to use a simple receiver.
c) The main disadvantage is that a.m. is used only in mobile radio.
d) The main disadvantage is that a.m. is the most complicated form of modulation.

41) "***Thus***" is not a synonym of:
a) Hence b) Meanwhile c) Therefore d) Consequently

42) a) as b) since c) due to d) because

43) "***caused by***" can be substituted by:
a) that result from b) produced in c) that lead to d) resulting in

44) "***its***" refers to:
a) amplitude variation b) f.m. c) effect d) noise

45) a) to b) so as to c) so that d) for

46) a) since b) because of c) as d) although

47) According to paragraphs 3 & 4 on frequency modulation, which is **TRUE**?
a) The main advantage of f.m. is a good signal-to-noise ratio.
b) The main advantage of f.m. is that it can be used for telephony.
c) F.m. is mainly used at the lower parts of the frequency spectrum.
d) F.m. is unsuitable for u.h.f. and s.h.f.

48) "***the one***" refers to:
a) signal b) receiver c) phase d) carrier

49) "**a waveform of reference which is generated locally**" is :
a) a locally-generated reference waveform
b) a local waveform-generating reference
c) a local reference waveform-generating
d) a waveform locally-generated reference

50) According to paragraph 5 on phase modulation, which is **TRUE**?
a) P.m. is better for speech than f.m.
b) A p.m. signal cannot be demodulated.
c) P.m. is unsuitable for analogue signals.
d) P.m. is the best type of modulation for analogue transmissions.

COMPLETE THE FOLLOWING DIAGRAM ACCORDING TO INFORMATION IN THE 2nd PARAGRAPH

35) a) sinusoidal carrier b) sideband c) modulating signal d) modulation

36) a) one sideband b) two sidebands c) highest frequency d) erect sideband

37) a) erect sideband b) baseband c) lower sideband d) inverted sideband

38) a) erect sideband b) baseband c) lower sideband d) inverted sideband

39) a) erect sideband b) baseband c) lower sideband d) inverted sideband

40) According to paragraph 2 on amplitude modulation, which is **TRUE**?

a) The main advantage of amplitude modulation is that it uses all the transmitted power.

b) The main advantage of a.m. is that it allows to use a simple receiver.

c) The main disadvantage is that a.m. is used only in mobile radio.

d) The main disadvantage is that a.m. is the most complicated form of modulation.

41) "Thus" is not a synonym of:

a) Hence b) Meanwhile c) Therefore d) Consequently

42) a) as b) since c) due to d) because

43) "caused by" can be substituted by:

a) that result from b) produce in c) that lead to d) resulting in

44) "As" refers to:

a) amplitude variation b) a.m. c) effect d) noise

45) a) to b) so as to c) so that d) for

46) a) since b) because c) as d) as

47) According to paragraphs 3 & 4 on frequency modulation, which is **TRUE**?

a) The main advantage of f.m. is a good signal-to-noise ratio.

b) The main advantage of f.m. is that it can be used for television.

c) f.m. is mainly used at the lower parts of the frequency spectrum.

d) f.m. is considered as a TV part.

48) "The one" refers to:

a) signal b) trouble c) phase d) carrier

49) "a waveform of reference which is generated locally" refers to:

a) a locally-generated reference waveform c) a local reference waveform-generating

b) a local waveform-generating reference d) a waveform locally-generated

50) According to paragraph 5 on phase modulation, which is **TRUE**?

a) p.m. is better for speech than f.m.

b) A p.m. signal cannot be demodulated.

c) p.m. is unsuitable for analogue signals.

d) p.m. is the best type of modulation for analogue transmissions.

ESCOLA UNIVERSITÀRIA POLITÈCNICA DE VILANOVA I LA GELTRÚ

Assignatura: **ANGLÈS 2 (TELECOS)**
Curs: **1996-97**
Codi de la prova: **340-72531-00-0-00**
Convocatòria: **30 Juny 1997**
Puntuació: 35 respostes encertades d'un total de 50 per aprovar. Les incorrectes no descompten.

PART I. Identify the mistake in the following sentences:

1.- ***(a) The function of computers is to process*** information. ***(b) Since***, computers ***(c) can be defined as*** devices ***(d) which*** accept information in the form of instructions, perform operations and supply the results.

*2.-*The properties of a metal ***(a) can be improved*** by using heat treatment. Heat treatment is the name given to a number of different procedures ***(b) in that*** the properties of metals are changed. ***(c) For example***, hardening is used to make metals harder. Annealing is ***(d) carried out to*** make a metal soft so that it can be machined more easily.

3.- Intelsat satellites now carry over 100,000 telephone circuits, using digital transmission. ***(a) Coding methods source digital*** have ***(b) resulted in*** a reduction in the transmission rate ***(c) needed to carry*** a voice channel, ***(d) thus*** enhancing the capacity of existing facilities and reducing the size

4.- The television camera ***(a) refers to*** the element of the television system ***(b) that*** converts optical images into electrical signals. It ***(c) consists on*** three main parts: the ***(d) optical lens system***, the camera tube and the amplifiers.

5.- A technique called frequency reuse allows ***(a) that satellites communicate*** with a number of ground stations ***(b) using*** the same frequency by transmitting in narrow beams pointed towards each of the stations. ***(c) Beam widths*** can be adjusted to cover areas as large as the United States or as small as a country ***(d) like*** Belgium.

6.- ***(a) Unless*** two crystals of a semiconductor material, one of p-type and one of n-type, are joined together, ***(b) a pn junction is formed***. This junction ***(c) can be used as*** a rectifier and ***(d) is known as*** a pn junction diode.

7.- Electronic components, ***(a) e.g.*** resistors, conductors or capacitors, soldered directly to the surface of a printed circuit board ***(b) should not be removed*** using pliers or pincers ***(c) owing to*** the circuit board pattern ***(d) is likely to*** peel away.

*8.-*We frequently talk about designing 'a system'. A system may be ***(a) an electric power distribution network*** for a region or a procedure ***(b) for detect*** faults in machinery. A large system ***(c) is usually divided into*** subsystems, ***(d) which are made up of*** components.

II. Choose one of the following options. Only ONE is correct:

9.- If I _____ a Mechanical Engineer, I would be able to work in my father's company. Unfortunately, I preferred to study Chemistry.

a) were b) was c) would be d) would have been

*10.-*The alarm will work _____ you disconnect the mains supply.

a) in case of b) provided c) unless d) otherwise

11.-My salary must be increased, otherwise I'll look for another job.

This sentence **DOES NOT MEAN THE SAME AS...**

a) I'll look for another job unless my salary is increased.

b) If my salary is not increased, I'll look for another job.

c) I won't look for another job as long as my salary is increased.

d) Provided that my salary is increased, I'll look for another job.

*12.-*You _____ check the voltage before using the equipment.

a) may b) can c) must d) might

13.- a) Diodes enable that electricity flows in one direction, but they prevent that it flows in the other.

b) Diodes enable electricity flowing in one direction, but they prevent it to flow in the other.

c) Diodes enable electricity to flow in one direction, but they prevent it from flowing in the other.

d) Diodes enable electricity flow in one direction, but they prevent it flow in the other.

*14.-*If Volta had been able to use pure materials, no electric current _____ when he connected his cell in a circuit.

a) would have flowed c) would flow

b) will flow d) flowed

15.- Engineering materials are classified_____ their properties.

a) into b) ~~belonging to~~ c) ~~according to~~ d) basis of

16.- When he gets his_____ in Electronic Engineering he will have to find a job.

a) title b) career c) licence d) degree

*17.-*The invention of the voltaic cell was a major _____ in the development of electrochemistry.

a) break-in b) breakthrough c) break-out d) breakdown

18.- They ***discovered*** a new way of transmitting information much more quickly that revolutionized the world of communications.

The verb in **bold type** has a synonym in:

a) looked for b) looked into c) found out d) turned out

VOCABULARY

PART 1.-

2.- annealing:	recocer
3.- enhancing:	aumentar
7.- pliers:	alicates
pincers:	tenazas
peel away:	pelarse

PART 3.- TEXT: RADIO WAVES.

line 12	long range:	largo alcance
line 37	concrete:	cemento
	fairly:	bastante
line 40	whenever:	cuando, cuando quiera que

III. Read the following texts and answer the questions below:

RADIO WAVES.

Radio waves are used for wireless transmission of sound messages, or information, for communication, as well as for maritime and aircraft navigation. The information is imposed on the electromagnetic carrier wave as amplitude modulation (AM) or as frequency modulation (FM) or in digital form (pulse modulation). Therefore, transmission involves not a single-frequency electromagnetic wave but a frequency band whose width is proportional to the information density. The width is about 10,000 Hz for telephone, 20,000 Hz for high-fidelity sound, and five megahertz (MHz= one million hertz) for high-definition television. This width and the decrease in efficiency of generating electromagnetic waves with decreasing frequency sets a lower frequency limit for radio waves near 10,000 Hz. *[19]*

[20] ***Because*** electromagnetic radiation travels in free space in straight lines, scientists questioned the efforts of the Italian physicist and inventor Guglielmo Marconi to (12) develop long-range radio. The curvature of the Earth limits the line-of-sight distance from the top of a 100-metre tower to about 30 kilometres. Marconi's unexpected success in transmitting messages over more then 2,000 kilometres *[21]* ***led to*** the discovery of the Kennelly- [2] Heaviside layer, more commonly known as the ionosphere. This region comprises approximately *[22]* ***a layer which is 300 kilometres thick*** starting about 100 kilometres above the Earth's surface in which the atmosphere is partially ionized by ultraviolet light from the Sun, *[23]* ***giving rise to*** enough electrons and ions to affect radio waves. Because of the Sun's involvement, the height, width, and degree of ionization of the stratified ionosphere vary from day to night and from summer to winter. *[24]*

Radio waves transmitted by antennas in certain directions are bent or even reflected back to Earth by the ionosphere, as illustrated in Figure 6. They may bounce off the Earth and be reflected by the ionosphere repeatedly, making radio transmission around the globe possible. Long-distance communication is further facilitated by the ground wave. This form of [3] electromagnetic wave closely follows the surface of the Earth, particularly over water, *[25]*_____ the wave interaction with the terrestrial surface. The range of the ground wave (up to 1,600 kilometres) and the bending and reflection of the sky wave by the ionosphere depend on the frequency of the waves. Under normal ionospheric conditions 40 MHz is the highest-frequency radio wave that can be reflected from the ionosphere. *[26]*_____ accomodate the large band width of transmitted signals, television frequencies are necessarily higher than 40 MHz. *[27]* ***Therefore***, television transmitters must be placed on high towers or on hilltops.

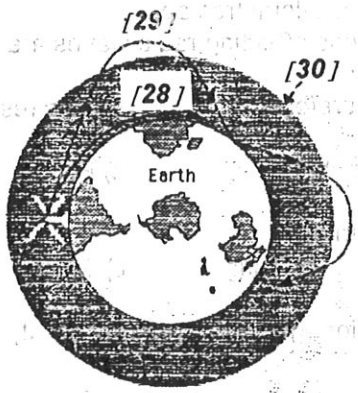


Figure 6: Radio-wave transmission reaching beyond line of sight.

©1994 Encyclopaedia Britannica, Inc.

As a radio wave travels from the transmitting to the receiving antenna, it may be disturbed by reflections from buildings and other large obstacles. Disturbances arise when several such reflected parts of the wave reach the receiving antenna and interfere with the reception of the wave. Radio waves can penetrate non-conducting materials *[31]*_____ (37) wood, bricks, and concrete fairly well. They cannot pass through electrical conductors like water or metals. Above ν = 40 MHz, radio waves from deep space can penetrate the Earth's atmosphere. This makes radio astronomy observations with ground-based telescopes possible. *[32]*

(40) Whenever transmission of electromagnetic energy from one location to another is required with minimal energy loss and disturbance, the waves are confined to a limited region by means of wires, coaxial cables, and, in the microwave region, waveguides. *[33]* ***Unguided*** or *[34]* ***wireless*** transmission is naturally preferred when the locations of receivers are unspecified or too numerous, as in the case of radio and television communications. Cable television, as the name implies, is an exception. *[35]*

(FROM: *Encyclopaedia Britannica*, "Electromagnetic Radiation", pp.200-1)

19) According to **paragraph 1**, which is **FALSE?**
- a) Transmission using radio waves is done within a wide frequency band, depending on the information density.
- b) Radio waves can be used for many different kinds of information transmission.
- c) The frequency bandwidth necessary for the transmission of sound is lower than that of high-definition television.
- d) Radio wave transmission is limited to only one frequency.

20) ***"Because"*** can be substituted by:
a) Because of b) Since c) Due to d) As a result

AS A RESULT OF
HOWEVER
SINCE
AS

21) ***"led to"*** means:
a) was caused by b) was produced by c) brought about d) resulted from

22) a ***"layer which is 300 kilometres thick"*** can be rewritten as:
- a) a layer thick 300 kilometre
- b) a 300-thick kilometres layer
- c) a thick-300 kilometres layer
- d) a 300-kilometre-thick layer

23) ***"giving rise to"*** means the same as:
a) which leads to b) produced c) resulting from d) caused by

24) According to **paragraph 2,** which is **TRUE?**
- a) Scientists believed from the beginning that Marconi would be able to develop long-range radio.
- b) The ionosphere was discovered due to Marconi's success in transmitting messages over more than 2,000 kilometres.
- c) Line-of-sight distance is limited by the curvature of the Earth when transmitter and receiver are only 100 kilometres apart.
- d) The ions and electrons affecting radio waves are made up on the Earth's surface. COMPOSED UP

25) a) because b) therefore c) as a result of d) so

26) a) In order to b) So that c) For d) For to

27) ***"Therefore"*** is a synonym of: CONSEQUENTLY
a) As as result of b) Thus c) Since d) So

According to the description given in **paragraph 3**, CHOOSE THE RIGHT TERM TO COMPLETE **FIGURE 6:**

28) a) ionosphere b) ground wave c) sky wave d) hilltops

29) a) ionosphere b) ground wave c) sky wave d) receiver

30) a) ionosphere b) radio waves c) sky wave d) globe

31) a) i.e. b) such as c) namely d) likely

THAT IS

32) According to **paragraph 4**, which is **TRUE?**

a) Disturbances or reflections from tall or large obstacles can affect the transmission of radio waves to a receiving antenna.

b) Radio waves can be transmitted through non-conducting materials and electrical conductors.

c) Above 40 MHz many radio waves sent from the Earth are lost into deep space.

d) Radio astronomy is possible since in space there are no reflections of radio waves.

33) ***"unguided"*** means that:

a) uses guides b) is not guided c) is guided badly d) that is misguided

34) ***"wireless"*** means that:

a) uses wires b) has wires c) that has bad wires d) does not use wires

35) According to **paragraph 5,** which is **FALSE?**

a) If minimum energy loss and disturbance is required for radio wave transmission, wires, coaxial cables and waveguides have to be used.

b) In case receiver locations were too many or not specified, it is advisable to use wireless transmission.

c) The use of wireless transmission is used for radio and cable television.

d) Unguided transmission cannot be used for cable television.

PRINCIPLES AND PROBLEMS OF TELECOMMUNICATIONS.

Telecommunications today centres on the problems involved in transmitting large volumes of messages over long distances without damaging loss ***[36]*** ***due to*** noise and interference. Such problems with short-distance messages are not as severe; the signal travels over two-wire lines without additional processing. ***[37]***

Figure 12 shows the basic components of a typical long-distance telecommunications system capable of transmitting voice, teletypewriter, facsimile, data, or television signals. If digital transmission is employed, signals are first processed in a coder that transforms completely ***[38]*** ***their*** character. Typically the coder includes filtering and coding circuits [2] ***[39]that convert*** the signal into digital form; in data transmissions this step is bypassed because the signals are already in digital form. For analogue transmission—***[40]that is***, transmission of voice and other signals without converting them to digital form—the coding stage may be omitted. Most modern TV and voice communication use the analogue system; data, teletypewriter, and many other forms of telecommunications use digital techniques.

After coding, the signal is further processed in what ***[41]is known as*** modulator, a device for impressing the intelligence signal onto a radio-frequency signal of the proper [3] frequency for the form of transmission to be used. High-frequency signals are usually used for radio transmission; low-frequency signals are used in coaxial cables and other wire lines. The combination of coder and modulator is called the transmitter.

A receiver ***[42]picks up*** the transmitted signal at the destination. A demodulator eliminates the carrier wave, and a decoder transforms the message signal into ***[43]usable*** form. In many systems the decoder and demodulator are not physically distinguishable but are [4] simply parts of a subsystem that combines both. In two-way communications systems, with a transmitter and a receiver at either end, a modulator-demodulator combination, called modem for short, is employed. ***[48]***

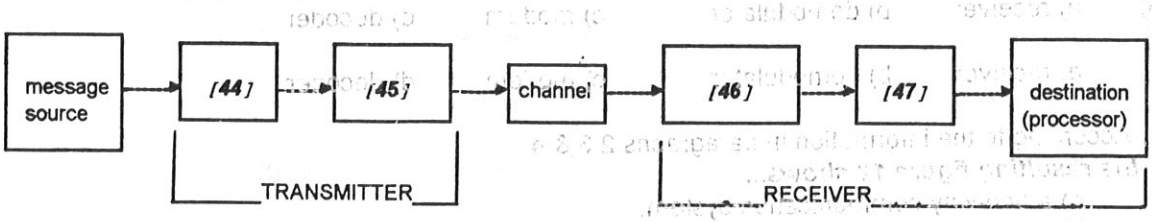


Figure 12 : Simplified block diagram of a typical long-distance telecommunications system

In transmission of speech, music, or picture information, the object is high fidelity—that is, the best possible reproduction of the original message. In some cases, however, other pertinent information may have to be extracted from the received signal. Examples include processing of seismic signals (natural and ***[49] vibrations on Earth that are made by men***) to obtain information about ***[50] the medium through which they are transmitted*** and the processing of sonar and radar signals. Signal processing that involves the interpretation of data includes such medical data as electrocardiograms and X-rays and environmental data such as air-pollution measurements.

(FROM: *Encyclopaedia Britannica,* "Telecommunications Systems" *p. 488)*

36) ***"due to"*** can be substituted in the text by:
a) because b) owing to c) as a result d) as

37) According to **paragraph 1**, which is **TRUE?**
The real problem of telecommunications today...
a) is how to avoid noise and interference in short-distance communication.
b) is how to prevent noise and interference from damaging messages in long-distance communication.
c) is how to avoid the total loss of messages in long-distance communication.
d) is how to keep from additional processing in short-distance communication.

38) ***"their"*** refers back to:
a) components b) telecommunications c) signals d) television signals

39) ***"that convert"*** could be substituted by:
a) converted b) converting c) who transform d) into which convert

40) ***"that is"*** is a synonym of:
a) namely b) e.g. c) such as d) like

41) ***"is known as"*** can be substituted by:
a) is named as b) is termed like c) is defined as d) is referred to as

42) ***"picks up"*** in the text means:
a) converts b) lifts up c) finds out d) gains

43) ***"usable"*** means that:
a) is being used b) can be used c) is useless d) is for a user

According to the description given in **paragraphs 2, 3 & 4,** CHOOSE THE RIGHT TERM TO COMPLETE **FIGURE 12:**

44) a) coder b) filtering c) modem d) modulator

45) a) coder b) coding circuits c) modulator d) modem

46) a) receiver b) demodulator c) modem d) decoder

47) a) receiver b) demodulator c) modem d) decoder

48) According to the information in paragraphs 2,3 & 4,
the resulting figure 12 shows...
a) a one-way communication system.
b) a two-way communication system.
c) the working principle of a modulator-demodulator combination into one system.
d) the working principle of a modem.

49) ***"vibrations on Earth that are made by men"*** could be rewritten as:

a) Earth-made men vibrations
b) man-made Earth vibrations
c) vibrations Earth men-made
d) vibration-made Earth man

50) ***"the medium through which they are transmitted"*** could be rewritten as:

a) the medium who they are transmitted through
b) the medium through that they are transmitted
c) the medium they are transmitted through
d) the medium whom they are transmitted through

A QUEN ES

+ WHICH ARE TRANSMITTED – TRANSMITTED

+